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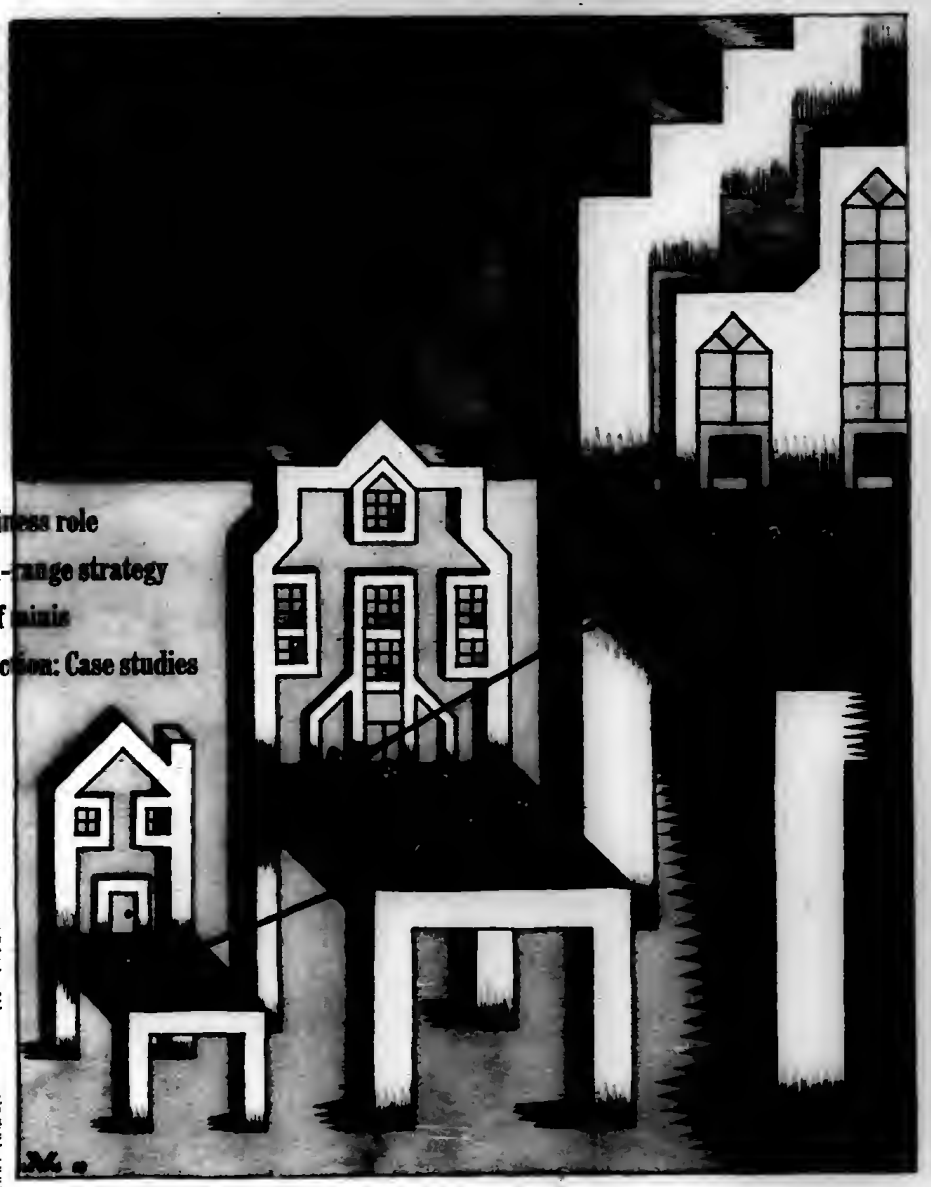

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in focus

TIME FOR A CHANGE

Work groups are forging departmental computing in their own image, promoting a versatile computing structure to mirror the flexibility that is so crucial to their dealings with each other. To stay abreast of this evolving definition of departmental computing, information systems professionals are altering their attitudes, roles and responsibilities. MIS is becoming a facilitator, creating an environment for senior management and work groups to achieve departmental computing's benefits. By Halsey Frost. *Page 18.*

IBM'S DEPARTMENTAL PREDICAMENT

IBM is in the process of bringing together a departmental architectural complex that is far superior to anything the company has done before. There is a problem, however; this new mid-range scenario is significantly different from what IBM's installed base has been using and requires massive migrations that its users may not want to undertake. This analyst scrutinizes IBM's departmental strategy and the reality beyond the company's marketing hype. By Brian Jeffery. *Page 23.*

Up for grabs

By Stan Kolodziej. Getting a hold of the mid-range marketplace can give a vendor control over the critical function of conducting data between micros and mainframes. No one vendor has overwhelmingly staked its claim in this area, although the likes of IBM, DEC and companies with Unix-based systems are still trying. Read about how these vendors hope to become departmental winners. *Page 27.*

Are minis' days numbered?

By Marty Gruhn. To the detriment of minicomputers, LANs and network file servers have increased in popularity as a means of supporting work groups and their departmental computing tasks. In fact, survey responses from MIS executives and departmental managers indicate that the mini may be fading as the key mid-range solution. *Page 29.*

COVER BY TIM LEWIS

Case studies

The confusion surrounding the definition of departmental computing may stem from the fact that companies have tailored the concept to their needs. Features Editor Michael Tucker talks to three organizations to find out what departmental computing means to each of them. Plus: A look at the aspirants to the departmental computing throne. Section begins on page 31.

From the Editor
Including your letters to us. *Page 5.*

Manager's Corner
Jim Young on the fine art of project validation. *Page 6.*

Q&A
IBM consultant puts IBM's Silverlake departmental offering in perspective. *Page 6.*

News & Analysis
Apple targets Fortune 500; Nixdorf revamps U.S. subsidiary; 9370 software remains a mystery; Prime, DEC go after mainframes; Unix standard pushed. *Page 13.*

Blue Beat
Brian Jeffery on IBM's slighted System/38. *Page 34.*

Products
Tech Talk on defining departmental computing; Prime superminis; Stratus fault-tolerant offering; Computone add-in board. *Page 34.*

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The Insider
Michael Millikin on Macintoshes as OS/2 alternatives. *Page 40.*

Log Off
IBM's lead in installed departmental systems in info centers. *Page 40.*

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FROM THE EDITOR

Emotional feedback

It's hard to believe that departmental systems can *still* raise passions — and rather intense ones at that. We went into this departmental computing issue of *Computerworld Focus* with the assumption that our topic's finer points had been argued out long ago. Surely, the theory and practice of middle-tier systems would have been perfected years ago, back in the days of the first office automation-oriented minicomputers.

We were wrong. One analyst we contacted was flatly insulted that we bothered him about departmental systems. To him, departmental systems were, effectively, just another way of saying OA. Yet, the very next day, one of our reporters attended a press conference cosponsored by Prime Computer and Cydrome, Inc. at which these companies, too, were using the term "departmental computer." But they were using it to describe their newly minted departmental supercomputer. The reporter interviewed an information systems officer at a large brokerage firm who was truly delighted with the product. "A Crayette," she said, "that I can put right in with the users."

The day after, I spoke to an MIS officer, who refused to let me quote or even cite him, who felt that departmental systems were a deadly threat to his profession. His argument was that, by making multiuser systems as accessible as personal computers, the departmental computer could put MIS out of work.

Rage, joy and fear. Curious passions for such systems to inspire. Part of the problem is that departmental computing is so ill-defined that it can mean many things to many people. But still, our writers were left wondering if, perhaps, there is more here than meets the eye. Doesn't this debate sound curiously familiar — like the arguments about PCs a few years ago? Could it be that departmental computers, like PCs, are only part of the larger trend that could either greatly enrich or greatly reduce MIS's power by bringing data processing closer and closer to the end user?

If this is the situation in departmental computing, then there are some concealed issues in this month's *Focus*. What seems to be a placid subject is actually filled with sharks and reefs and island paradises, too. It all depends on your perspective.

Michael Tucker

FEATURES EDITOR

Judgment day: Reader gives Greene a no-confidence vote

I would like to congratulate you for your editorial "Greene in judgment" in the Jan. 13 issue of *Computerworld Focus*. The idea of a jurist, however competent, trying to fully grasp, make sense of and channel the development of such a complex industry has been bothering me for some time. Your editorial points out beautifully how crazy such a proposition really is. That commentary should be sent to every member of Congress.

David E. Miller
Joiner Associates, Inc.
Madison, Wis.

Fourth-generation languages' success hinges on planning

The article entitled "The fate of 4GLs" in the Feb. 3 issue does not address one important point relevant to the success, or lack thereof, of fourth-generation languages — the management and/or mismanagement of 4GL-based projects.

Some of the negative comments 4GLs have had to endure are really the result of poorly developed applications, not necessarily anything inherent in the 4GL itself. In fact, the problem is that fourth-generation languages are quite tolerable and allow for a myriad of avenues one can follow to develop an application. The trick is to know the right avenue to take to get the most effective and efficient results. We have been very successful in making new believers out of 4GL users by dramatically increasing the throughput and functionality of an existing application by implementing proper techniques and using current facilities. Too often organizations have not upgraded their 4GLs to the current release level and have not re-educated their staffs in their proper use.

I agree that to continue to be successful 4GLs must become more powerful and have interfaces to relational data base systems. Part of this power will come from compiled code.

The use of a 4GL does not make or break an application. It is still the rolled-up-sleeves systems analysis, design and other preliminary work that contributes the most to the application's success. Why 4GL users lose sight of this preliminary work escapes me. By themselves, 4GLs won't weave any magic. The key is prior planning accompanied by effective use of the 4GL.

Loren D. Hurwitz, CDP
Relational Software Solutions, Inc.
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Philosophy, not technology confines information's power

Your interview with Ronald G. Ross in the Feb. 3 issue brought back memories. In the mid-1970s at Summa Corp., our brilliant but not-well-understood director of research had a personal commitment to information as a powerful corporate asset. The greatest challenge we faced was philosophical, not technical. Very few top managers were able to step aside from day-to-day matters and even begin to grasp the revolution we were suggesting. We renamed our MIS function the Corporate Data Bank, but most still saw information only as a recording of history. I believe top management must make a philosophical conversion before it is convinced that knowledge (and the information it is built on) can be power.

Lynn Milton Anderson
Los Angeles

VIEWPOINT

MANAGER'S CORNER

The fine art of project validation

Jim Young

It is a little surprising, not to mention embarrassing, for MIS to be accused of hotdogging. No sooner does MIS begin practicing sophisticated, progressive techniques then it may tend to forget the fundamental tasks of its profession.

Top management is finally recognizing the benefits that MIS provides to an organization, measuring them in strategic and competitive terms. But it is because of these halcyon circumstances, perhaps, that MIS thinks it has graduated beyond having to validate the returns on a finished project.

The big picture is important. And focusing on the strategic scope of MIS's impact is an essential, executive-oriented process. Yet we must not forget that total organizationwide benefits are made up of a series of investments, each with its own returns. Someone must ensure that, long after the attention-getting turmoil of systems construction and well after the celebration of implementation has been forgotten, the expected returns are realized. This assurance is key for numerous reasons — not only to ensure that technology is being used effectively but also to build credibility in the composite paybacks by demonstrating the accuracy and validity of each element.

As important as this step is, or more precisely, because of it, suddenly running out with a financial yardstick is not sufficient. Evaluating implemented projects requires an approach that respects the contribution made by properly conducted postevaluations. The following rules may help make postevaluations meaningful and useful.

• **Make sure evaluation is part of your charter.** Checking up on the success of a project is not the kind of task that can be carried out without at least tacit approval of the organization. To avoid being seen as a pretentious usurper or an exacting dilettante, MIS should make sure that management sanctions such an effort and that users appreciate the intent. Some environments feel that MIS's reviewing of the results of its own handiwork is a conflict of interest. If so, another group should perform the analysis, internal audit, finance, quality assurance and so on. In cases in which MIS performs the analysis, it is wise to have different individuals, even another MIS-related function, do the work. Either way, the important thing is MIS's close involvement and support of such an effort.

• **Set up the rules before the game begins.** At the time of project approval, make sure that the users whose project it is understand that their results will be examined. The objectives of the project should be spelled out in a measurable way. Most projects' benefits can be quantified in dollars — reduced expenses, minimized use of assets, increased revenue and so forth; others require less direct arithmetic — reduced order fulfillment time and reduced error rate, among other things.

The occasional project whose goals are intangible or subjective should attempt to itemize a target, such as customer satisfaction measures, value of information and supported decisions. The measures should have a base of comparison. For example, nothing can be more frustrating when assessing staff growth then finding out that personnel growth is ostensibly tied to business growth. If a goal has been set based on a certain revenue, the postevaluation team can adjust accordingly.

Together with setting measurable goals, MIS should identify the person responsible for ensuring that benefits are achieved. An appropriate choice would be a user manager close enough to the system to appreciate what it offers and with enough power to authorize savings and improvements. This person should have some responsibility for the success of the new systems. MIS should also establish a time frame in which it can achieve benefits and at the end of which it could conduct a postevaluation.

• **Perform a business assessment, not a DP assessment.** Just as system goals will measure benefits to the company, so, too, will an overall assessment evaluate the system through the eyes of the business. It may be nice to identify project problems, conformance to specifications and so on, but these elements are not as important as determining how the system contributes to an organization's goals and objectives. It is this bottom-line view that will pave the way for other MIS investment decisions or, conversely, to adjust the MIS investment strategy to improve benefits.

• **Say it politely.** The postevaluation is not so much a report card on how the system was designed as it is an analysis of how the system is being used and whether or not it is an effective solution. Because the report is destined for top management, it is a small wonder that the process can be intimidating to users who might feel they are under the microscope. Therefore, in a report, it is essential to be constructive, to be positive where appropriate, to present a balanced picture and, above all, to adopt a tone of "us" rather than one of MIS vs. users. If the postevaluation is to serve as a vehicle to prompt improvement, the system's users must understand and accept the recommendations in a positive way.

• **Say it in executive terms.** It is not sufficient to point out how much users like the new system, how much they use it or even how much easier it has made the work process. The salient observations should revolve around cost-benefit analyses, measures of effectiveness and even strategic impact. Summary analysis of high-level issues for important projects should be prepared for top management. While measurement against initial goals is a prerequisite, a good assessment will go further and identify unexpected improvements and side benefits as well. Often, in areas such as office automation, these advantages can outweigh the planned benefits. Point out the implications of new work methods, both the problems and the opportunities. These observations may improve benefit projections for new projects.

• **Be proactive.** From an executive standpoint, an essential part of the review is the recommendations from the evaluation team. After going through a major project and a period of use, MIS should have gained knowledge about how it should conduct projects, how the new system could be modified, how other systems could be adjusted and so on.

The nature of the recommendations will largely be determined by the results of the project. If the results are disappointing, remedial action is warranted. If the system is a roaring success, suggestions for follow-up projects to exploit other opportunities are appropriate. Even unmitigated failures should

Continued on page 11

Young is managing director of MIS for the Wheeler Group, a division of Pitney Bowes, Inc. in Hartford, Conn.

Q AND A

David H. Andrews

On Silverlake: Analyst puts IBM's departmental offering in perspective

For 20 years, David H. Andrews has worked his way through the mainframe user's environment. But by his own admission, nothing excited him as much as IBM's System/38 introduction did; and Andrews, then an MIS manager, discovered a new calling. In 1984, he went into the consulting business, launching ADM, Inc. in Cheshire, Conn., with the purpose of helping MIS managers with IBM 370 technology discover the high-program productivity and cost-effectiveness of the System/38's architecture.

Today, ADM President Andrews has 12 consultants on staff monitoring IBM's latest activities. IBM is in the midst of its ambitious Silverlake project: to integrate the System/36 and 38 and to enhance the 38's relational data base capabilities with SQL. Andrews recently spoke with *Computerworld Focus* Senior Writer Helen Pike about Silverlake.

What is Silverlake?

Physically, it's going to be a family of compatible computers, maybe six models.

The range is going to extend from the middle of the current 36 line up to at least twice the power of the top end of the 38 line, ... somewhere between two and three times the power of the the System/38 Model 700.

We believe you're going to see an announcement during the second quarter of 1988 and delivery sometime during the third quarter. Speculation that the announcement is due any day now is incorrect. IBM will bring it to market as soon as it possibly can, but it won't rush it if it is not ready. There's still a lot of work to do; this is a complex project.

Why is it complex? What is there left to do?

Well, just the final stages of shaking down and debugging. The creation of all new microcode has been a sort of a gating item on putting it together.

The underlying architecture is going to be a superset of the System/38 from a computer architecture standpoint, and parts of the 38's CPF operating system will be reused. Below that level, all the microcode has to be rewritten. Each different model has its own microcode.

Do you think it will usher in a new generation of computing?

Senior management at IBM views this as sort of a revolutionary step forward, not just another niche product. The last time the company did anything this significant in terms of a turn in direction was introducing the IBM Personal Computer.

The 38 has been a niche product since its inception. The concept is to move it out of the niche status and give it a heavy push.

What is Silverlake's relationship to IBM's 9370?

They're both going to be made on the same production line, and, physically, they're going to have a great deal of resemblance. The racks are the same, the peripherals are the same, the I/O controllers are the same and the power supplies are the same.

However, don't confuse that to the point where you think its either a hybrid computer or that one computer runs both codes or anything else. The interface is going to make them completely different machines.

Was the 9370 intended as a bridge product to the Silverlake models?

Absolutely, [although] I wouldn't use the phrase "bridge product." I would say the 9370 was designed to serve a particular need. Folks with a heavy investment in 370 software needed small 370s on which to be able to distribute existing 370 applications, and IBM needed a small platform to run programs like Cadamore, [an IBM computer-aided design and manufacturing offering].

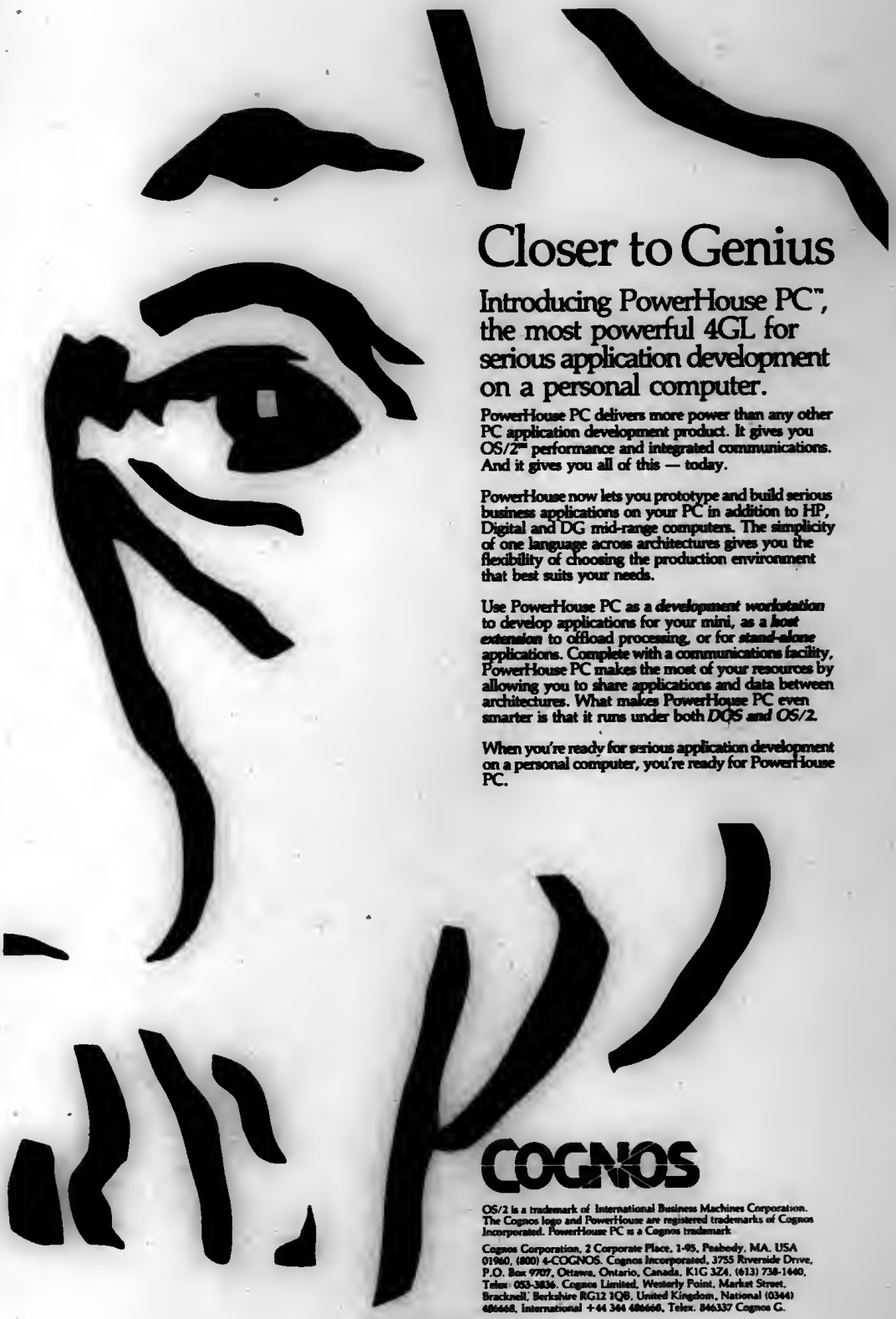
The 9370 was never intended to be IBM's only offering in the mid-range, and the firm never realistically believed this thing was going to be a VAX killer or take over the marketplace.

Is Silverlake the Digital Equipment Corp. VAX killer?

I don't use that phrase, and I know everyone is going to be asking, "Is it the VAX killer?" IBM is realistic enough to realize that DEC and VAX are firmly enough established that nothing is going to kill them right now. I would say it is IBM's hope that the Silverlake system will reverse the trend the VAX line has started to make into the commercial mid-range marketplace.

Up for grabs are office automation and communications, and IBM would like to regain some

Continued on page 11



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Circle Reader Service Number 3

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Circle Reader Service Number 4

Q and A

Continued from page 6

market share there at DEC's expense.

Looking out two or three years — not all of this is going to happen in one day — I think the most common use for Silverlake systems will be to act as control points for clusters of intelligent workstations. The workstations will be physically attached to the Silverlake through some kind of local-area network.

Some people say, "Oh, you mean [Silverlake] is going to be a file server?" Well, that's correct, but the term "file server" sort of implies a lesser role. I prefer to refer to it as a control point for a network of intelligent workstations. I think that's the role IBM would like to see it in.

And what role will telecommunications have in the Silverlake models?

The decision was intentionally made to put a communications-oriented person in charge of the Silverlake project. It is going to have a very strong communications flavor.

It'll have a very strong connection with the intelligent workstations for which the blueprint has just been published as part of the IBM Systems Application Architecture [SAA] specifications.

The SAA specifications describe how intelligent workstations are going to work with host systems. That interface will be implemented on the Silverlake series.

In terms of networking, Silverlake will have all of IBM's Systems Network Architecture capabilities the current System/36s and System/38s have. In addition, but not likely in Release 1, the networking model will be the Advanced Peer-to-Peer Networking capability that was announced for the 36s a year and a half ago.

I also believe the technology in IBM's 3720 and 3745 will be incorporated into a mid-range rack-mounted version and will become the communications controller for Silverlake over time.

What will this mean to IBM's mid-range competitors?

The greatest strength Silverlake is going to have in the marketplace is the fact that the machine itself was designed around an integrated relational data base capability.

The mid-range marketplace in a few years could have a lot of Silverlakes and a lot of VAXs. The strategy of many of the remaining vendors could be to consolidate around Unix.

What does all of this mean to the MIS manager?

If you're coming from the 370 environment, this [new] environment is a lot easier to deal with.

There was a rapidly growing trend even before Silverlake for large 370 organizations to switch to 38s. Even firms with IBM 3080s and 3090s are moving towards doing a much higher percentage of their work on 38 technology.

We strongly believe Silverlake is going to accentuate that trend. People aren't going to throw out all their 3080s and 3090s; instead, what you're going to see is a different mix.

The typical mid-range 370 user is using the IBM DOS/VSE operating system and is facing a conversion to both IBM's MVS and DB2.

During the next five years, half or more of the current DOS/VSE users are going to choose the Silverlake path rather than the MVS/DB2 path. That direction is going to be a lot less costly and take a lot less time and effort.

What will be the next step after Silverlake?

Sometime in 1989, or certainly by '90, we're going to see the Summit series of mainframes. Those are the machines beyond the 3090.

The Summit series will be a step toward bringing the 370 and the Silverlake architectures together. The Summit is likely to have one of the important characteristics of the 38 or Silverlake — it's likely to be a single-level storage machine. The next generation after Summit, we think you're going to see another generation of mainframes that will, in effect, merge the two technologies.

Manager's Corner

Continued from page 6

not be allowed to slink off into obscurity unexamined. Honest confrontation of such an unpleasant experience can prevent it from recurring, especially if MIS makes recommendations based on lessons learned.

The proactive nature of the evaluation document should be a natural extension of the initiative necessary to implement a postevaluation process. Ensuring that an organization is enjoying the full advantages of its investments in automation is a responsibility that calls upon MIS to demonstrate leadership and business values.

Hopefully, part of the reason for rising to this challenge is to show top management that MIS is a responsible steward of organizational resources. Who knows? Perhaps with top management's confidence, the basis for a new system's reputation might revert to the intuition and fundamental trust generally granted to MIS in the old days. Then we can spend more energy delivering benefits to our organizations and less energy proving their worth.

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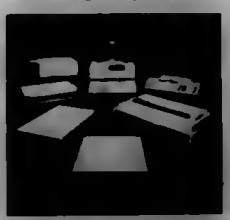

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news & analysis

UPDATE

Apple, DG publishing tools

If desktop publishing is destined to fade, it won't be soon. The market is still cooking, made hotter by some recent product introductions, most notably from Apple Computer, Inc. and Data General Corp.

Apple upgraded its printer technology with three laser printers aimed at the desktop market, and DG inked a three-year OEM contract enabling DG to incorporate Xerox Corp.'s Ventura Publisher software into DG's CEO Desktop Composer package.

The Apple announcement is significant because it continues the company's full backing of a business that some analysts have been contending could peak any time. The three Apple laser printers use Canon U.S., Inc.'s LBP-SX engine and offer 300 dot/in. resolution, and Apple claims that the printers offer up to four times the speed of existing Apple Laserwriter printers.

As for Data General, the company says it will configure CEO Desktop Composer with its Dasher/286 PC and word processing and communications software to create what it terms "turnkey publishing systems."

The DG announcement is important because it attempts to merge desktop publishing directly into a large, integrated departmental processing system, such as DG's Comprehensive Electronic Office, thereby centralising something that, to date, has been the epitome of decentralised, personal computer-based computing. Could be a sign of things to come.

9370 sales cannibalizing System/36, 38 market share

IBM's appearing a little sheepish lately after admitting that the sales of its 9370 line of departmental computers have lagged behind its optimistic projections. The machines have yet to take the edge off the expanding sales of Digital Equipment Corp. VAXs into U.S. corporate departments, a casus belli for IBM and the reason for the appearance of the 9370s.

To make matters worse, the 9370 could be less of a "VAX killer" and more of an IBM "System/38 killer," according to Scott Brown, marketing manager at Focus Research Systems, a West Hartford, Conn., research firm.

"We've found that almost all of the 9370's relative market share in this study is cannibalized from System/36 and System/38 machines, and the hardest hit is the System/38," Brown says.

Brown adds that the big winner in all of this could be DEC. He argues that DEC's departmental market share relative to IBM's is virtually unchanged but that the overall departmental computing market has grown by 50%.

"In other words," Brown says, "DEC is enjoying the same percentage of a larger pie."

Oracle, Lotus join crowded micro-level SQL arena

The IBM SQL market continues to get more confusing at the microcomputer level. Oracle Corp. recently introduced Oracle for 1-2-3, a software package that enables users to type SQL commands or choose menu options from within Lotus Development Corp.'s 1-2-3 spreadsheet. Users can then retrieve data from Oracle data bases residing in IBM Personal Computers or from other host computers.

The product competes directly with an upcoming Lotus SQL-based local-area network data base management system that reportedly will be equipped with a 1-2-3 interface. Ironically, though Oracle's SQL product will compete directly with Lotus's scheduled SQL product, it was developed by Oracle using Lotus's own Developers Toolkit.

The SQL market got really crowded, however, at the recent revelation that Microsoft Corp., Ashton-Tate Corp. and relational data base developer Sybase, Inc. are working together to develop an SQL data base engine for network servers. (See story page 15.)

IBM reorganization affects departmental strategy

The background to IBM's departmental computing has suddenly changed. IBM recently

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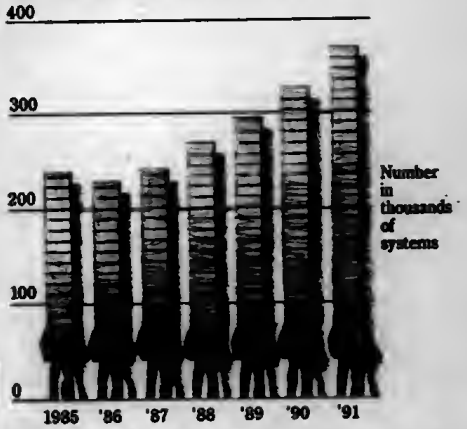
Multiuser mania

U.S. shipments of multiuser systems



INFORMATION PROVIDED BY AN INTERNATIONAL DATA CORP. REPORT BASED ON 125 U.S. MULTIUSER SYSTEM VENDORS.

GRAPHIC BY BRUCE SANDERS

Apple renews MIS effort

Gets blessing from DEC, woos IBM users

Apple Computer, Inc. in Cupertino, Calif., has received a much-needed blessing in its bid to woo Fortune 500 MIS managers thanks to Maynard, Mass.-based Digital Equipment Corp.

The two firms went public in January with a joint development announcement that formalized connectivity efforts under way since late 1986 to integrate Apple Macintoshes and Appletalk 2.0 into DEC's VAX/VMS 2.0 architecture and Decnet/OSI network, respectively.

"You could say this is the Good Housekeeping seal of approval," comments Chuck Boesenberg, Apple's senior vice-president and group executive for U.S. sales and marketing. "We are definitely serious about selling into the Fortune 500 marketplace."

From DEC's perspective, the integration of Apple at the low-end reverses "the utter failure" Digital experienced in trying to sell expensive and sophisticated personal computers to a market that wanted cheap machines, explains DEC President Ken Olsen.

"Personal computers did great for work alone," Olsen observes. "But in organizations, you need to work together. . . . Apple has a great network [easily plugged in], but they have to have a plug into an international network."

The Apple connection adds yet another low-end capability to Digital's Network Applications Support (NAS), a strategy that emphasizes networking over systems configurations. Digital executives also indicate the company is planning to extend NAS to include machines from clone makers Compaq Computer Corp., Olivetti Corp. and Zenith Data Systems Corp.

Nixdorf seeks higher profile for its U.S. subsidiary. See story page 14.

A developers' conference for Macintosh independent software vendors is scheduled for August to introduce them to NAS's capabilities.

Says William Strecker, DEC's product strategy and architecture vice-president, "It's a too bad it's a cliche, but we really were responding to customer demands to integrate the two."

Wooing IBM's MIS users

The dust had barely settled on the DEC-Apple alliance when

Continued on page 17

Revamped Nixdorf unit to blitz U.S. market

The company has been here for several years, keeping the lowest of profiles, quietly gaining market share in U.S. businesses like retailing and banking. It has been the quietest of residents; industrious but low key.

It is curious, considering this vendor's parent organization is big time in Europe, thought to be one of the most dynamic and diversified computer companies on that continent. Now the company figures it is high time to make some noise in the U.S.

The U.S. company in question is Nixdorf Computer Corp., the North Reading, Mass.-based subsidiary of Nixdorf Computer AG of Paderborn, West Germany. For the past two years, the parent corporation has undertaken a major push to beef up its U.S. subsidiary into a formidable systems marketing force in departmental computing.

For Nixdorf AG, that plan will not happen soon enough. According to one source, Nixdorf's U.S. subsidiary lost about $100 million in 1985 and a further $50 million in 1986. That's a lot of financial hemorrhaging. To turn those figures around, Nixdorf says it is planning a three-stage strategic revamping of its U.S. subsidiary, which could have consequences for the hotly contested U.S. departmental computing market in the 1990s. Nixdorf is also hoping it will change its subsidiary's status from poor cousin to star performer.

According to Charles P. White, program director of industry service at the Gartner Group, Inc., a Stamford, Conn.-based research firm, Nixdorf's first move is a necessary shift from a dying data entry business to what the firm sees as some of the hot markets of the next decade: vertical, high-transaction-volume industries, such as banking, insurance and retailing, and more general, departmental computing applications.

"To help with that," White explains, "Nixdorf's U.S. sales and service organizations have been expanded considerably in the past two years. Just as importantly, the various U.S. Nixdorf branches have been given much more operating autonomy and have separate reporting lines from Nixdorf AG's development organization." Such an arrangement, White explains, places the U.S. company in a unique and privileged position among Nixdorf AG's various international subsidiaries. The extra autonomy, the parent firm explains, could provide the U.S. operating units with the capability to act more quickly on business opportunities.

At the same time, Nixdorf took a long look at its tried-and-true 8870 departmental systems platforms and decided a change was needed. The 8870 family is based on 16-bit processor technology, which, in the past few years, has quickly been overturned and replaced by faster 32-bit machines introduced by Digital Equipment Corp., IBM and others. The 32-bit machines are increasingly in demand from large corporate customers.

To plug the gap, Nixdorf recently unveiled its Targon line of 32-bit machines based on the Motorola, Inc. 68020 processor.

Along with the upgrade to the 32-bit machines, Nixdorf also decided it needed a new operating system for the 32-bit architecture and chose Unix.

Departure from the norm

Opting for a standardized operating system like Unix is quite a departure for Nixdorf, which, like DEC and, until recently, IBM, built its reputation on providing turnkey systems using proprietary systems architecture. In Europe, Nixdorf has been known for its turnkey proprietary systems solutions, and it tried to carry such strengths over to the U.S. market. However, except for a few showcase accounts, sales have been flat.

Microsoft Corp. was one of these accounts and is, in fact, a good illustration of a classic Nixdorf sell. Three years ago, the Redmond, Wash., software developer chose a Nixdorf turnkey system to handle manufacturing resource planning activities at its U.S. and European subsidiaries. The system chosen was a popular one for Nixdorf customers: Nixdorf 8870-based minis and terminals running its Comet vertical systems software.

"What we were looking for was an international vendor with good systems, good international applications and a system that could deal with local currencies and customize for each country," says Neil Evans, MIS director at Microsoft. "Nixdorf was solid in all those areas."

Gerry Ordelheide, vice-president of sales and marketing at Nixdorf's U.S. subsidiary, says that he looked at the U.S. departmental market and saw vendors such as DEC and IBM fighting it out with proprietary systems.

Ordelheide

"We saw that these vendors didn't have enough applications for users, because they never emphasized software development like Nixdorf did," Ordelheide claims. "We had more than 4,000 applications that we had developed over the years. We knew nonproprietary systems and software would be the way to go in this market."

Even so, Ordelheide acknowledges that he and colleagues at Nixdorf will have a big selling job convincing corporate America of the commercial viability of Unix, an operating system that is much more synonymous with European commercial computing.

"I believe MIS in the U.S. is still technology driven and looking for anything that will put them ahead, including Unix," Ordelheide says. "There are more than 100 Unix software houses in the U.S. You can build turnkey systems with Unix, but it does not lock customers in. If they wish to go to another [Unix] vendor, they can. Nixdorf wants to become the main driver for Unix in this country."

To that end, Ordelheide points to the nationwide service and software network the vendor has put in place during the past few years to back its U.S. marketing push. "Service and software will be big factors in the 1990s in computing," he says.

It might be bumpy along the way, however. Despite Nixdorf's progress, for example, White of the Gartner Group gives the vendor a mixed scorecard for the near future.

"There's a German term, "jaein," that is used to describe something that has both good and bad points," White explains. "Nixdorf's shift to Unix will be a mixed blessing."

Microsoft's Evans has his own recommendation for Nixdorf. "I think Nixdorf still has something to learn about the independence and savviness of U.S. customers," he says. "U.S. customers like to get into the hardware and software and take a look. Being a turnkey systems vendor, the Nixdorf people have been uncomfortable with that.

"However, I think they're a little less stodgy and formal than they were," Evans adds. — SK

dB

By Rich Tennant

Update

Continued from page 13

reorganized into five business units grouped along key product lines, including 370 architecture systems, which include the 9370 line, and System/36 and 38 computers.

The decentralization move was explained as a necessary one by IBM Chairman John Akers to make IBM more flexible and responsive to market trends. By making the System/36 and 38 a separate business unit, the company underscored its commitment to continue to market these machines, along with Silverlake, IBM's rumored System/36 and 38 follow-on, as key parts of its departmental strategy.

Novell unveils OS/2 network plan to get market jump on IBM

The IBM OS/2 local-area network race is getting a boost at the network level from Novell, Inc.

The fast-charging Provo, Utah-based LAN vendor has announced it will support IBM's OS/2 Standard Edition through its Network Requestor, a software package enabling an OS/2 workstation to talk to a Novell Netware server.

Novell also announced its Netware Application Processor, which won't be released, however, until IBM starts shipping its own networked OS/2 Extended Edition later this year. The processor is aimed at providing support for OS/2 server-based applications.

Arch Novell competitor 3Com Corp. had, a short time before, unveiled its 3+Open OS/2 LAN strategy. By basing its OS/2 networking plans on the already-available OS/2 Standard Edition, both Novell and 3Com are hoping to get a market jump on IBM, whose own OS/2 network strategy is squarely centered on the Extended Edition, an offering that is scheduled for release in the latter part of 1988.

Visicalc guru ships enhanced Demo program prototype software

From the almost-fell-through-the-cracks column: Dan Bricklin, of distant Visicalc fame, is now shipping Demo II, the enhanced version of his firm's product, Demo, which enables both experienced and novice programmers to create program prototypes.

Bricklin, president of Software Garden, Inc., a two-person operation based in Newton, Mass., says that the company has sold up to 20,000 copies of the original Demo directly from his home and that some heavy hitters, such as Microsoft Corp., have used Demo to create their own software products.

Maybe good things *can* come in small packages. — SK

NEWS & ANALYSIS

Whereabouts of 9370 software still a mystery

More than a year after its introduction, the IBM 9370 remains something of a mystery. Initially viewed as a departmental system, the smallest member of the 370 clan so far has not fully taken on that role. As of yet, there is little prepackaged applications software for the machine.

So far, the 9370 has been sold in the same manner as its larger siblings, with the majority of its sales to MIS departments in large corporations. Whatever software that exists usually has been written in-house by these MIS departments.

"Partly, it's a matter of installed base," notes one software vendor, who asked not to be named. "At the moment, there aren't that many 9370s out there, and those that are are at the sort of Fortune 1,000-type firms where most of the software development is going to be internal anyway. That's just not going be a market for us. At least, not yet."

The vendor did note, however, that the situation could change as more of the machines enter the business world.

Those that write

Meanwhile, the software vendors that are writing for the machines are mostly producing system-level software or application development tools. Also, some developers say they are looking to apply the 9370 to vertical market applications. This tactic, however, has raised its own set of problems, because IBM does not have a good track record at the care and feeding of vertical marketers. IBM's inability to deal effectively with smaller companies going after small markets may be one of the leading causes for the 9370's relative unpopularity to date.

Another reason that the 9370 may not be attracting a lot of software developers is the impending debut of IBM's much-rumored Silverlake machine, the successor to IBM's System/36 and 38 lines. One of numerous unconfirmed stories about Silverlake is that it is easy to use. If that is the case, then Silverlake — not the 9370 — could be IBM's real departmental offering. By basic definition, a departmental machine is one that may be set in a corner and run either unattended or attended by computer novices with minimal assistance from MIS.

It may be that developers of departmental software see Silverlake as their real market and are waiting accordingly. In any case, some observers suggest that the 9370 is not a departmental system at all but, rather, a kind of downsized mainframe meant for the aid and comfort of MIS shops.

One way or the other, the mystery could be solved as early as this winter. By the fourth quarter, Silverlake probably will be available for public inspection. Moreover, by that time, the population of 9370s will have significantly increased. Software developers will then have a clear choice of which, or neither, of the machines is their best bet. — MT

Sybase SQL Server gets nod from Ashton-Tate, Microsoft

Sybase, Inc. thinks it may have the silver lining for MIS directors in the cloudy issue over who has control of the corporate data base. Sybase, along with Ashton-Tate Corp. and Microsoft Corp., announced in January a local-area network server for IBM's OS/2 environment.

Sybase, the Berkeley, Calif., developer of the first SQL-based relational data base, is licensing its technology to Microsoft in Redmond, Wash. In turn, Microsoft and Torrance, Calif.-based Ashton-Tate, under a separate license from Microsoft, will ship enhanced versions of the product, SQL Server, in the second half of this year. Microsoft will add the MS OS/2 LAN Manager interface, while Ashton-Tate is embedding the SQL sublanguage in Ashton-Tate's Dbase IV, which came out last month. Although prices have not been fixed, they are expected to be between $1,500 and $3,000.

"Now is the time to deal with connectivity to corporate mainframe computing," comments Ashton-Tate Chairman Edward Esber about his goal to establish work group data base technology as "a responsible member of corporate computing." He adds that "servers are the solution to MIS managers' problems."

Microsoft Chairman Bill Gates agrees. "Data base servers will bring work group computing to life," he says. "They hold the key to true multiuser connectivity. Individual productivity tools have run out of gas, so work group productivity is the next step.

"The client-server architecture will be the cornerstone of new computing," claims Gates, who emphasizes OS/2 as playing a critical role on the network.

OS/2 meetings

Late this month in San Francisco and again in April in New York, Microsoft will hold developers' conferences on OS/2 as a network operating system. The conferences will focus on Microsoft's work group technology, the SQL Server and Microsoft's MS OS/2 LAN Manager.

As of January's announcement, the SQL Server had attracted the attention of Information Builders, Inc., Symantec, Blyth Software, Inc. and Borland International, Inc., which reportedly will write programs for the server.

For its part, Sybase claims it will port

Continued on page 16

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Circle Reader Service Number 7

AT&T, Sun ink Unix deal

Amdahl joins in to push Unix as a standard platform

AT&T's MIS effort has been a pale one at best. But after the December holidays, company officials came back East tanned from a financial arrangement with Mountain View, Calif.-based Sun Microsystems, Inc. that is intended to ensure the development and promotion of Unix as a standard platform for the full range of heterogeneous computing.

Based in Morristown, N.J., AT&T's Data Systems Group (DSG) inked a deal that calls for up to a 20% investment by AT&T in 5-year-old upstart Sun — a stock investment that could total more than $300 million over three years.

The deal is all part of a plan aimed at making the MIS director's job easier, both companies maintain.

According to Bill Stockman, DSG's software product manager, the arrangement "gives the MIS director the option to choose, in the competitive marketplace, any hardware he wants and to preserve his application base."

"The customers understand that [Unix] gives them the freedom of choice," adds Bill Woo, Sun's senior product manager for Unix/ADI, an application binary interface that interchangeably runs Unix software.

AT&T and Sun's Unix push was further strengthened at Uniforum in February when Amdahl Corp. announced it will base its next UTS mainframe release on the companies' new Unix iteration. As an interim step, Amdahl has come out with a 4635 communications interface unit that will link AT&T's virtual circuit switch to UTS.

The Unix campaign, however, was not without a backlash from competitors. Companies led by Hewlett-Packard Co. and Digital Equipment Corp. publicly voiced fears that a vendor-led effort to standardise Unix might force the operating environment into a proprietary status.

AT&T and Sun's competitors demanded, and got, an audience with DSG's president, Vittorio Cassoni, on Jan. 28. According to an AT&T spokeswoman, Cassoni maintained AT&T will keep Unix as an open system and that the company will improve its performance.

Specifics of the deal

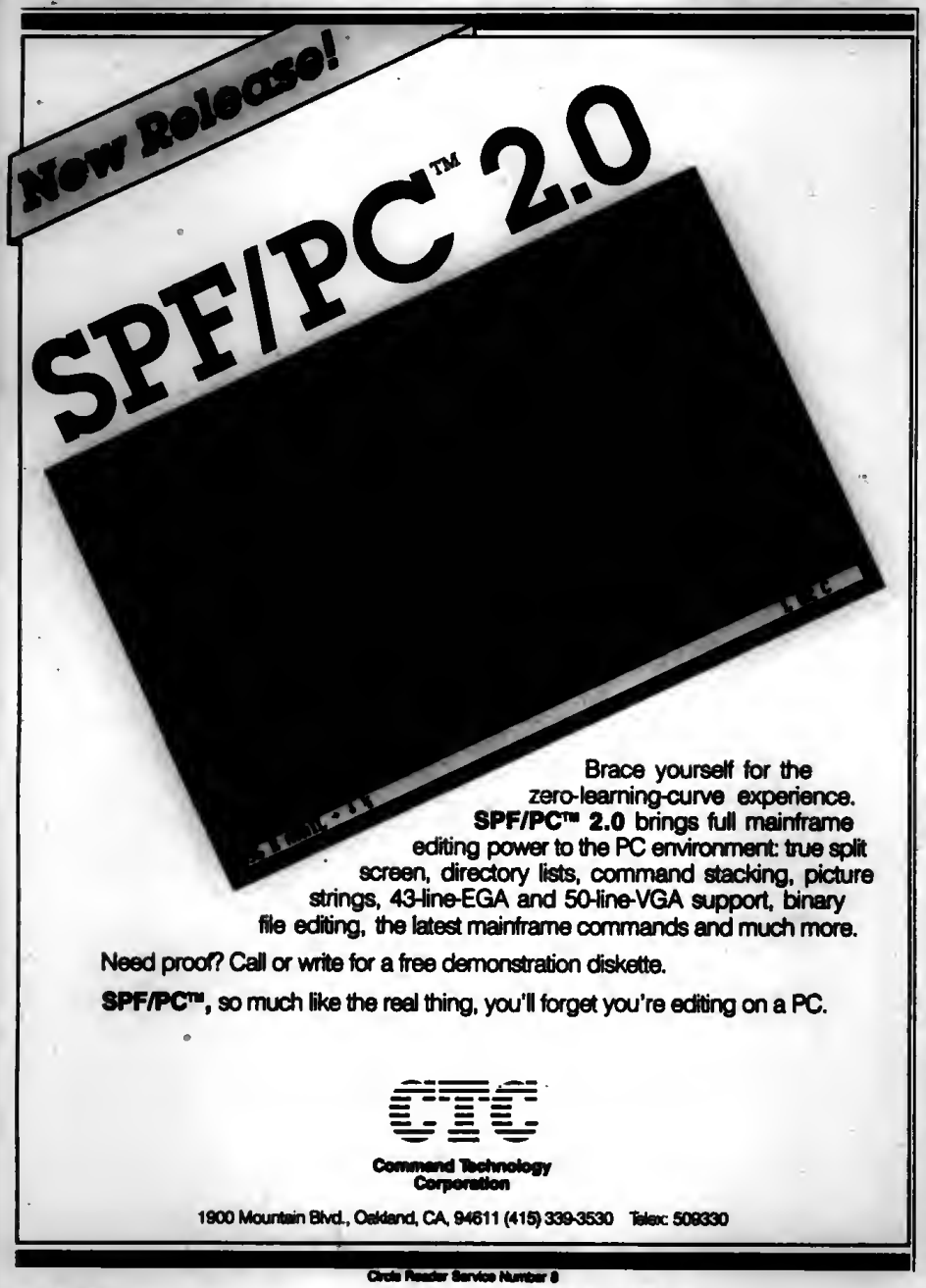
The Sun and AT&T collaboration calls for merging elements of AT&T's Unix System V with those parts of the University of California at Berkeley Unix 4.2 favored by the scientific and engineering community. It also will meld networking and graphics features of Version 4.2 already used by Sun in its Unix derivative, SunOS. The latter two features chiefly refer to Sun's Network File System and its X.11/Network Extensible Window System, a graphic user interface.

The arrangement enlarges a prior deal set last fall in which Sun agreed to help AT&T develop a mid-range family based on Sun's revolutionary Sparc, or scalable processor architecture chip, which uses reduced instruction set computing technology.

AT&T's Unix bid is further strengthened by a pact signed earlier in 1987 with Redmond, Wash.-based Microsoft Corp. to incorporate the features of Xenix, Microsoft's Unix version that runs on Intel Corp.'s 80386 microprocessor, into System V.

By mid-1988, Sun is expected to have a version of SunOS available that will conform to AT&T's System V interface definition. In 1989, AT&T hopes to offer Unix System V with key Unix 4.2 and SunOS features.

All of which is observed by John McCarthy, an analyst with Forrester Research, Inc. in Cambridge, Mass., who claims that "Unix is at a disadvantage right now. But it lies there. Unix, instead of a time-sharing pig, will be the client-server computer architecture of choice. For now, MIS managers should sit back and wait. How well Sun makes its run at departmental computing remains to be seen." — HP



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Circle Reader Service Number 8

Sybase server

Continued from page 15

its Data Toolset to OS/2 in time for the mid-year shipments of its relational data base server from Microsoft and Ashton-Tate.

But in the second quarter of this year, Sybase says it expects to have available a systems developers kit for its data base library code and documentation.

According to Robert S. Epstein, co-founder and executive vice-president of Sybase, by giving the company's relational data base an OS/2 LAN connection, MIS managers will regain some of the control they lost to the personal computer-oriented trend in distributed computing.

"All the power will be in the mainframe without damaging the data base," Epstein reports. "I think this will eliminate the struggle between PC users and MIS departments." — HP

NEWS & ANALYSIS

Prime, DEC ready mid-range wares to rival mainframes

While departmental computing remains a hot topic in the industry, departmental computer vendors seem to be trying to turn attention elsewhere. Leading departmental and minicomputer vendors Digital Equipment Corp. and Prime Computer, Inc. have introduced versions of their products that act like mainframe systems.

This trend reflects advances in technology that make smaller multiuser systems worthy rivals for even very large systems. However, the movement is also

North American Mortgage's *Trice, left, and Robert Withoff, data center operations manager.*

a product of revamped marketing strategies on the part of mini vendors.

Natick, Mass.-based Prime's mainframe-like departmental offering is the 6550 system, a dual-processor computer first shipped in January. The first 6550 customer was North American Mortgage Co. in Houston.

At North American Mortgage, the 6550 will fit into a nationwide network of Prime and non-Prime systems. "It's going to handle our entire corporate data base and some of our telemarketing," explains Susan E. Trice, the company's first vice-president of information services. "It will deal with general ledger, our mortgage service operation, a new online marketing service. . . . Basically, we haven't found anything we couldn't do with it."

Trice claims the firm has no interest in going with a similar IBM system.

Meanwhile, Maynard, Mass.-based DEC had been looking at the mainframe market for some time. It initially promoted clusters of its VAX minis to do mainframe-like operations. More recently, however, the company was widely reported to be working on a four-processor version of the VAX that is clearly targeted at the mid-range of IBM's mainframe line.

DEC is also believed to be working on a version of its VMS operating system that would better support large on-line transaction processing applications.

'Eaten alive'

Technologically, analysts suggest the mainframe trend is fairly easy to implement. William Zachmann, vice-president of corporate research at International Data Corp., a research firm in Framingham, Mass., recently distributed a white paper titled "The Mainframe Meets the Micro — And Gets Eaten Alive." In the paper, Zachmann argues that systems based on multiple, inexpensive microprocessors are now so powerful that they can easily overwhelm mainframe processing power.

However, industry observers are less certain about the wisdom of microcomputer- and mini-based vendors going head-to-head with IBM. Market analyst Shaku Atre, president of Atre International Consultants, Inc. in Rye, N.Y., points out that one departmental system vendor — Lowell, Mass.-based Wang Laboratories, Inc. — already attempted to get into mainframes and was badly mauled for its efforts.

"People shouldn't be trying to get into the mainframe market right now," Atre claims. "What DEC should be doing is looking to its micros. So far, there hasn't been anything, if you will, over the Rainbow." — MT

Apple renews

Continued from page 13

the California firm turned around and announced a series of offerings for IBM mainframe users and keepers at the Infonetics Desktop Communications Conference held in Anaheim, Calif., at the end of January.

The first of these offerings was MacAPPC, a software implementation of IBM's LU6.2 and PU 2.1 protocols. MacAPPC paves the way for developing Mac applications on IBM's Systems Network Architecture.

Included in MacAPPC is Apple's Hypercard, a stack development tool that lets programmers create applications that can include graphics and sound.

A site license for the product is priced at $2,500.

Then there was the announcement of the Macworkstation, a software tool kit that lets developers, resellers, systems integrators and MIS departments create a Macintosh interface for programs operating on a host.

An internal license for the Macworkstation costs $2,500; a commercial license costs $5,000.

Lastly, Apple announced a Macintosh coprocessor platform for IBM Nubus coprocessor add-in cards for the Apple Macintosh II.

The platform includes a Motorola, Inc. 68000 processor operating at 10 MHz with 512K bytes of random-access memory and a bus master interface to the Nubus.

In addition, the product incorporates a real-time, multitasking operating system, which supports a set of services for software executing on a card, and a defined interface to the Mac II. — HP

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Circle Reader Service Number 9

Time for a change

MIS expands its business role

BY HALSEY FROST

The new face of departmental computing has prompted changes in the attitudes, roles and responsibilities of information systems professionals. Through its involvement at the department level, highly disciplined and structured MIS has begun to promote a work environment that thrives on being flexible.

And top management has begun to notice the changes. Many MIS managers are shaping isolated technology goals into corporate ones, taking advantage of leadership opportunities that exploit not only their high-tech knowledge but also their management skills. As they come to terms with the shifting climate of the mid-range, MIS professionals continue to boost their business acumen.

Even though departmental computing is evolving and its place in organizations is emerging more clearly, its definition remains fuzzy, probably because many can exploit this imprecision. Vendors, for example, have seized upon the term to promote sales and profits, identifying it by class of hardware: primarily minicomputers, supermicrocomputers and microcomputers connected via local-area networks.

Corporate personnel, on the other hand, have exploited the term by using it to bypass the bureaucracy — real or perceived — in MIS. Corporate staff seems to justify this bypass by normally associating the term with end-user or client computing.

Another reason for the term's vagueness may be that it reflects the confusion among MIS as well as among other managers in an enterprise about departmental computing's place in the overall organization.

Since departmental computing's inception, its meaning has changed, and it may continue to evolve. Two years ago at the National Office Automation Conference in Washington, D.C., I defined departmental computing as "departments having their own computer larger than a personal computer processing multiple applications to satisfy staff and mission requirements." Today, however, to clarify the term and make it reflect what is being implemented, we should think of it as work group, rather than departmental, computing to discard the connotation of a definite organisational structure.

Departmental computing, as it is being implemented in most organizations, does not necessarily respect department boundaries or include all functions of a department. However, it usually does include processing the functions of a work group, regardless of its size, location or formal status in an organization. Thinking in terms of work group computing removes the need to revise major departmental systems with every reorganization, acquisition or divestiture. Often, whole departments may be eliminated or reduced, but the functions they perform do not necessarily go away.

The very impreciseness of the departmental computing notion may be appropriate, because it reflects what is happening in the information systems industry today. As end users or clients assume greater responsibility for information systems, computers are being used in an increasingly unstructured manner (spreadsheets and office automation applications, for example). This makes computer processing easier for most businesspeople to understand, because many of them function and operate in an unstructured manner in a flexible business environment.

This versatile structure, however, may be threatening to some MIS managers. For one thing, it may cause some confusion. Historically, the MIS function has been highly structured, following well-defined

Frost is a senior associate at New York-based management consulting firm John Diebold & Associates, a division of The Diebold Group, Inc.

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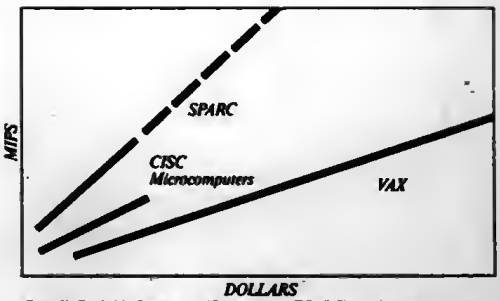

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procedures to respond to clearly defined users' needs. Now, however, users seem to understand — and like — departmental computing's ability to allow them to develop timely responses to changing situations without needing to meet many of MIS's highly structured requirements.

This apparent dichotomy in providing information support may also help explain senior management's lack of understanding and acceptance of MIS professionals' role as business managers who contribute to corporate objectives. They are no longer merely technical administrators.

The breakdown of the highly structured MIS environment has been accelerated by the effective use of PCs, and now other distributed information processing environments are similarly shaking off the shackles of restraint. Managing information systems effectively in this increasingly unstructured environment requires an understanding of the attitudes, roles and responsibilities of those involved. Successful departmental computing capitalizes on these changes, and progressive MIS managers promote them for their companies' as well as their own advantage.

The information processing environment has undergone, and continues to face, rapid transformation. Amazingly, however, these changes have frequently gone unnoticed by MIS personnel, who should be the primary agents of change. In many cases, this lack of awareness resulted from failing to see the larger trends that prompt change; in other cases, it resulted from a heavy work load and the pressures of business. Rarely has this oversight extended to technological change, although missing the PC's impact on corporations was a significant exception. Instead, MIS's unawareness usually involved the attitudes and expectations of clients and business management.

A very significant change has taken place — information processing is no longer a mystery to most businesspeople. In many cases, businesspeople developed their own applications when they needed them. Although the application may have only been a simple spreadsheet, this accomplishment beneficially altered their attitudes.

Unfortunately, MIS personnel's underestimation of the impact of PCs made top management and users doubt the value of MIS support. They saw MIS as an inhibitor, rather than a facilitator, of PC use. At about the same time, corporate management became aware of the potential of information processing as a competitive tool. This long-awaited recognition of the value of information improved business management's attitude toward MIS and raised its expectations of information technology.

During this time, the business climate was optimistic and expansive. PCs proliferated, and departmental computing expanded. Savvy MIS managers took this opportunity to lead their firms in finding information support applications that contributed to the business.

In the last few years, computing in companies has been altered drastically, becoming increasingly complex and integrated. Integration has become a technology industry problem, not merely an MIS concern.

Demands escalating

Because of these changes, MIS is being attacked from all sides. Time has quickly become a problem as the euphoria of work groups that generated their own information via PCs and departmental computing has subsided. Work groups are realizing that the data they need resides in existing applications managed by MIS. Consequently, as requests for access to corporate data have escalated, MIS faces more demands for integration and expanded communications capabilities.

Business management has also increased its demands on MIS. Sensing the competitive value of information systems, corporate management now expects MIS management to participate actively in business evaluations and make a significant contribution through information technology. In addition, the corporate brass expects MIS to manage and control the apparent runaway expenses of keeping up with technology.

While MIS wrestles with this dilemma, work groups and clients bristle with frustration. Changes affect their functions as well. When they adopted PCs and departmental computing, users added information processing to their daily business activities, partly because it allowed them to seize the opportunity to generate their own information as they wanted it.

Users also embraced computing in response to the general downsizing that was taking place in most organizations. Business personnel developed a strong belief that wider technological application was the best way to cope with reduced staff and increased information demands. Work groups were enthusiastic about doing more with information systems but became frustrated when they realized they couldn't do it alone.

Fortunately, an important attitude change had taken place. While historically, work groups would have viewed MIS as unresponsive to their needs, this time these groups have begun to understand the complexities of information processing and to recognize the need for access to corporate data. As a result, work groups acknowledge that MIS can help them improve their use of departmental computing and PC processing.

Technological developments continue to encourage and support work group attitudes and capabilities. Departmental computing's effectiveness capitalizes on the interaction of two major technological trends. The first is the "diseconomy of scale" in processors: the concept that computer performance does not necessarily increase in proportion to costs (see chart). PC vs. mainframe processor price/performance is the most dramatic example of the diseconomy of scale, but the concept also applies, to a lesser degree, to communications and software. Lower prices have brought technology to the desktop and have also created a highly complex technical environment. The need for common access to data from the desktop creates this complexity. Integration and interoperability remain to be achieved.

Ease of use is the second major trend promoting departmental computing today. It enables personnel without technical backgrounds to use MIS technology effectively in business. Ease of use is the result of software professionals taking advantage of the trend of increased hardware capacity and lower unit costs. This trend enables work groups to become more responsible for application development, freeing MIS to address highly technical areas such as integration, communications and data administration.

The transfer of application development responsibility to work groups will make strides in resolving programmer shortages and the applications backlog. Hopefully, both MIS and work groups now recognize that they need each other.

Departmental computing appears to be a promising solution, but it certainly has not yet lived up to its touted potential. Senior management and work groups are looking to MIS management for leadership and for MIS to fulfill its primary role in departmental computing — that of facilitator. It should play this role by creating an environment that makes it easy for senior management and work groups to achieve departmental computing's benefits, capitalizing on the changes in attitude discussed above.

MIS management can become this facilitator if it changes its approach by letting go; MIS needs to stop thinking in terms of having to do everything. MIS can establish a partnership with a work group in which each partner's role and responsibility is recognized and understood. This relationship should satisfy senior management's expectations, once it understands what each partner must accomplish. Work groups are in a better position than MIS to develop competitive business applications and are more likely to achieve the benefits top management expects. As a partner, MIS will share the rewards by enhancing work group capability to identify and implement the right applications.

Roles and responsibilities in departmental computing are not absolute; they vary according to three basic organizational philosophies: centralized, decentralized and distributed. In departmental computing, a centralized philosophy gives MIS the major responsibility of planning to perform almost all support functions. A distributed philosophy is a shared approach, with responsibilities spread among MIS and work groups. A decentralized approach provides work groups with the primary responsibility for departmental applications development and support. In a decentralized environment, MIS focuses on activities that affect organizations other than just individual work groups and provides the necessary governance and infrastructure for corporate MIS activities.

In most businesses today, the trend is toward the decentralized approach: Decision making is moving down the organization to small business units. However, the trend in departmental computing is to move from its historical centralized position toward a distributed approach. This variance reflects the better understanding of information processing outside the MIS organization and allows MIS to focus its efforts on achieving systems integration and interoperability.

MIS's side of the bargain

MIS should have primary responsibility for providing corporate MIS policies, standards and guidelines to ensure compatibility and effective resource use. Likewise, data administration and telecommunications cross organizational boundaries, requiring MIS to watch over these functions for maximum interoperability.

Other services, such as technology research, training, education and, to a lesser degree, office systems support, can be provided more efficiently by a central resource like MIS than by each work group. However, this factor does not preclude MIS from delegating portions of an activity to work groups.

The work group's responsibility expands from funding and waiting for delivery of information applications to taking responsibility for business application management, implementation and support for its unique information needs.

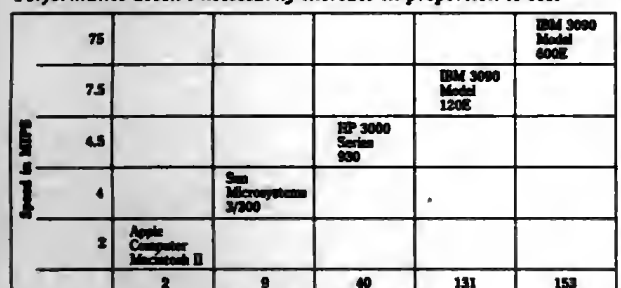
A work group that cannot provide appropriate resources can ask MIS to help provide resources to perform these activities or obtain the services from qualified outside sources. In any case, responsibility for applications remains with the work group. It must manage the information support most critical to its performance.

Although this discussion has focused on departmental computing, it certainly applies to the broader realm of all corporate information processing. MIS's role is changing to that of the facilitator of technology application required by work groups. To do so requires that MIS implement the necessary infrastructure: a widespread telecommunications network and a well-defined and accessible corporate data base.

Administratively, this setup involves providing standards and guidelines, training and education programs and overall planning. This infrastructure will allow work groups to effectively provide business management with systems that can make a difference in the competitive position of their organizations. ◆

The diseconomy of scale in processors

Performance doesn't necessarily increase in proportion to cost



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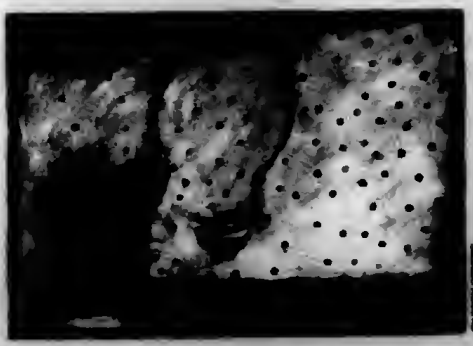
IBM's departmental predicament

Early misjudgments hamper strategy

BY BRIAN JEFFERY

Talk about departmental computing, and it is hard to leave out IBM. IBM may not have invented the concept, but the company has certainly been one of its most enthusiastic converts.

IBM claims to have one of the best sets of offerings for departmental computing. It offers the 9370, a mid-range system that implements the tried-and-true 370 architecture and that has an entry-level price at the new low of $31,000. IBM also offers the Personal System/2, an advanced personal computer, and the Token-Ring, a PC local-area network. The principle, as IBM puts it, is simple enough: You have 370 mainframes, Systems Network Architecture (SNA) and IBM Personal Computers. You build on that investment by adding compatible components and creating what IBM describes as a "370 affinity" throughout your organization. Easy enough, right?



Wrong. There is much about IBM's departmental computing scenario that doesn't quite fit the picture. For example, there is the matter of the 9370 delays, which have amounted to close to a year from the machine's announcement to general availability. SNA communications software, which was announced eight months after the 9370 debut, did not become available until a year after that.

Obviously, there is something odd here. Surely IBM shouldn't have trouble providing VTAM support for a 370 machine. Didn't the company figure that capability out years ago? And why so long a wait for its OS/2 Extended Edition operating environment? By IBM's own admission, development on the PS/2 began back in 1983. Does it take five years, with Microsoft Corp.'s help, to develop a PC-DOS-based operating system?

It is easy to sniff at this situation, ascribe it to IBM ineptitude and console yourself with the thought that it doesn't matter anyway, because Digital Equipment Corp. is winning the VAX wars, mainframes are going away and the IBM Micro Channel can be cloned. But the reality is more complex. With IBM, the reality is always more complex.

Let us start with the 9370. It is first and foremost a VM system. VSE is supported quietly, and IX/370 is minimally supported, but the 9370's main emphasis is on VM/SP. MVS does not work on most of the 9370 I/O, and MVS support, as IBM cryptically observed in its initial 9370 announcement, is intended to support development of "applications under MVS/SP on the host and transport, without changes to distributed work group locations." In other words, the 9370 in its present form cannot be used as an MVS production system.

Then there is the matter of TSAF, which was implemented for the first time under VM/SP Release 5. TSAF is an interesting phenomenon, a global resource manager that IBM claims provides transparent user access to server resources within a VM processor or across VM processors. The first TSAF support is for the SQL/DS relational data base management system, here making its debut for VM. The next product to look at is the Professional Office System (Profs), IBM's main office system offering for VM environments. This environment is progressively shaping up.

The 9370 has a Graphical Data Display Manager (GDDM) for image and graphics, QMF for data base query, Profs Application Support for PCs, ACF/VTAM 3 for LU6.2 support and Netview. But this is a Netview that is evolving toward something considerably more than just a network management package. It is Netview, with Netview Distribution Manager supported by VM/Distributed Systems Node Executive (VM/DSNX), which creates an on-line software distribution mechanism.

Amid all the detail, it is easy to miss what is happening here. This is not the MVS-based 370 architecture as we have historically known it. It

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is a VM and relational data base scheme, and it comes out of a number of systems and architectures that IBM has been using internally since the 1970s. There is Vnet, for example, IBM's internal VM-based peer-to-peer network system. Vnet is a non-SNA system in its origins that the company has never offered publicly. Vnet runs Profs, and, within IBM, there are more than 300,000 Profs users out of a work force of around 400,000. Interestingly, as far as office automation goes, IBM has been a VM shop for close to a decade.

Then there are the relational data base products. SQL/DS, DB2 and the rest of this group originated in the early 1970s with System/R, developed into a distributed relational architecture, R Star. Although IBM marketing focused on IMS and DL/1 in the 1970s, IBM's own laboratories worked with the relational DBMS applications, under VM, with Vnet. The distributed relational DBMS scenario that is shaping up now with DB2, SQL/DS and OS/2 Database Manager is R Star reincarnate.

Also, one should take into account Low Entry Networking (LEN), the dynamic network reconfiguration facility that is IBM's key vehicle for peer to peer. Oddly, IBM stated in June 1986 that LEN would be available first for the System/36 and 38 line. LEN was developed at IBM's Yorktown Heights, N.Y., facility, which is a VM shop, and it was developed for VM.

And on and on and on

And on it goes. The PS/2 with its Micro Channel implements a subset of VM; the Token-Ring network provides coprocessing for multiple PC and PS/2 clusters; the OS/2 Database Manager evolves into a LAN-based distributed relational DBMS environment; and the OS/2 Presentation Manager interfaces with GDDM. All of this is an implementation of exactly the same architecture that IBM built into the 9370 and optimised in hardware while waiting for the microcode to activate it.

The important idea here is that the IBM departmental computing scenario, with its 9370s, PS/2s and Token-Rings, represents not merely a different set of products but also a different architecture. The mysterious 9370 delays, the odd bugs and the long lead times to software availability reflect what IBM is trying to do. It is seeking to effect an evolutionary and highly complex transition across its entire product line to an architectural complex that is significantly different from and none too compatible with the installed base of its large end users.

IBM's maneuvers make more sense if looked at in historical perspective. For most of the 1970s, IBM's mainstream computing scenario revolved around MVS, IMS and CICS and SNA. The concept of distributed processing, born in the early 1970s, involved using distributed 3790s and later 8100 Information Systems with SNA. Then, in 1983, IBM began promoting the System/36 as its key departmental system and, thereafter, became an enthusiastic proponent of departmental computing (which, coincidentally, started to become popular about that time).

The System/36, tied to PCs tied to IBM's Distributed Office Support System (Disoss), acquired Personal Services to talk to PCs and Disoss. The Token-Ring, which appeared in 1985 as IBM's key LAN, ran some ASCII and Netbios for a while. But strangely enough, the network could not talk to the System/36, IBM's key departmental system, without a dedicated Personal Computer AT gateway. (The obvious conclusion? They came from completely different design streams.) Nor for that matter, could the System/36 talk to Profs, IBM's key VM office system, a situation that persisted after Profs became a central component of the 9370, IBM's new key departmental system. Curiouser and curiouser.

It probably would not come as a shock to most end users to hear that the System/36 offering was a stopgap departmental solution. What is a little more disturbing is that the whole complex of the System/36, Disoss, Personal

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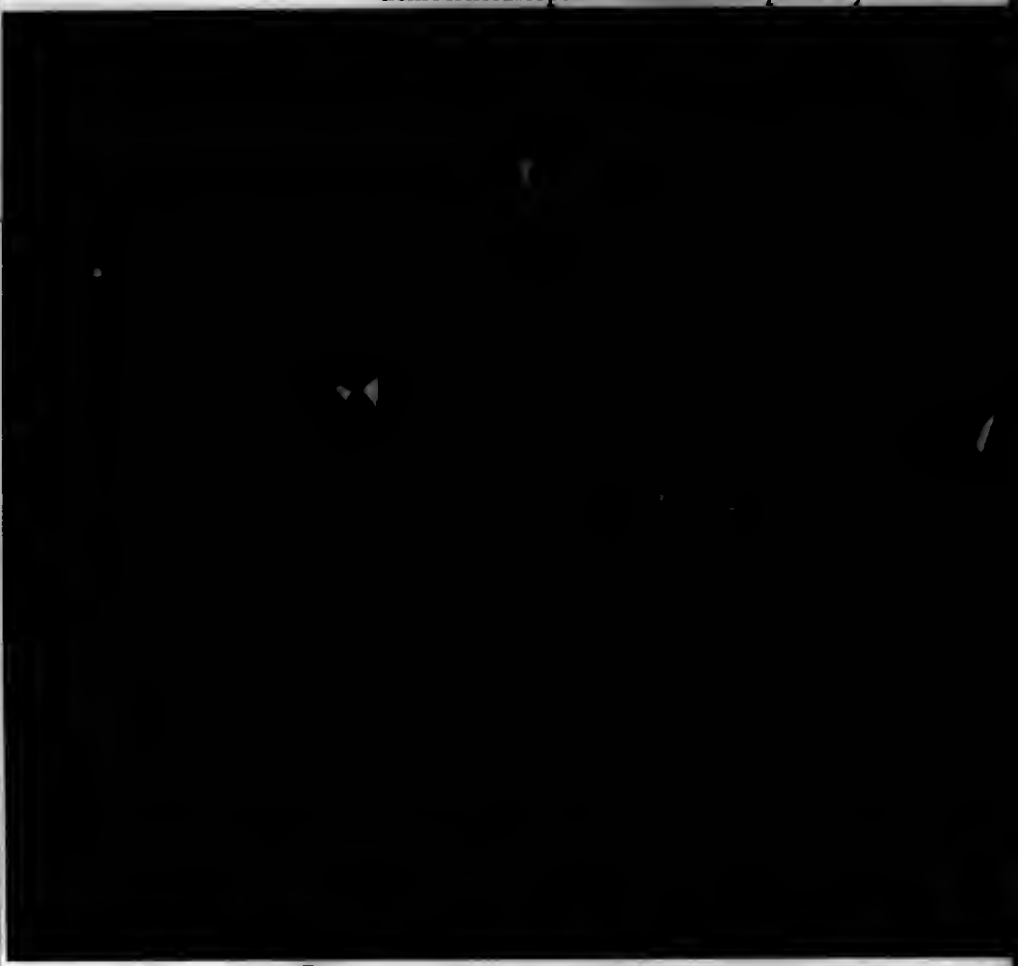

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Services, PCs and, by implication, much of the MVS software environment that went with these components was a massive stopgap architecture.

While IBM was promoting this stopgap measure, it was also quietly bringing in the components of a whole different scenario: Profs as a host VM office system, SQL/DS for VM in 1983 and the Token-Ring in 1985. Then, in 1986 and 1987, came enlightenment — these offerings were meant to work with 9370s and PS/2s. And while this point sinks in, we note that VM is suddenly blossoming into a full-blown large systems operating environment. After years of piecemeal and messy support for SNA and for 370 extended addressing, VM is now the way to go for data center systems.

And speaking of SNA, what of LU6.2? Officially introduced in 1982 to provide peer-to-peer networking capability, it was not fully integrated until June 1987, when the whole 9370 VM complex was also brought into the fold. Why did it take so long to provide even the most basic dynamic reconfiguration facilities for SNA, or a global data dictionary for DB2 or OS/2 Extended Edition? The delays have been remarkable. Unless, that is, the whole process was interdependent and the tasks were time-consuming because they were effecting a major architectural transition.

Which is exactly what has been happening. And, as so often with IBM, there is good news and bad news.

The good news is the architecture itself. It is good — very good. Vnet is potentially a far more machine-efficient networking method than classical SNA. VM/CMS is one of IBM's most user-friendly environments. VM's hypervisor facilities, the use of real and virtual machines, is a potentially useful solution for the user that needs to migrate applications. For example, even VSE under VM often runs more efficiently on 370 machines than in native mode. Profs, as IBM's internal network demonstrates, is highly effective for document communications within large organizations.

Rather quietly, too, VM has picked up the ability to handle voice communications, text, image, high-resolution color graphics generation and output and electronic publishing.

In addition, there are some noteworthy features in the VM network environment. VM/DSNX, with the Netview Distribution Manager, allows applications software to be customized at a single location and distributed throughout a network.

> **IBM must have believed its customers would drag themselves through the largest architectural transition in MIS history.**

VM/DSNX and the dynamic reconfiguration facilities of LEN add up to an interesting scenario. The 9370 was designed, IBM tells us, as a Fortune 500 system. Fortune 500 corporations typically never have been and probably never will be genuinely decentralised organizations.

Distributed processing has its limits, particularly in these times when corporate management is beginning to think of MIS functions as a competitive tool. To compete effectively requires coordinating the organization's resources as a whole while preserving a degree of flexibility at the company's lower levels. The IBM architecture arguably offers the necessary mix: local departmental processing with centralised top-down control as well as the ability to reconfigure centrally or to distribute new software applications overnight.

IBM's relational data base component is not negligible, either. The global resource manager facilities of TSAF with the compatible distributed DBMS architecture of SQL and QMF and, due to be integrated next, LEN, add up to a very powerful

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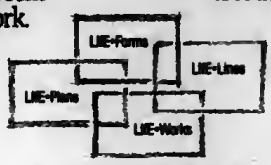

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data management complex — one that is already on the way to organizationwide single-level storage.

As for PS/2s, Token-Ring nets and the like, the fit should be very close. The reality is that the 9370, the PS/2 and the latest version of the Token-Ring are part of the same product line.

The high end of the PS/2 is, for all intents and purposes, the low end of the 9370, with the same latent functions. The Token-Ring, as a central component of coprocessing, can provide a local 4M bit/sec. communications infrastructure in the same way for PS/2s, Token-Rings, controllers and other IBM systems. The Micro Channel, with its facilities for multiple systems networking, is merely a local version of the broader VM I/O technology already implemented on the 9370.

Impressive impression

IBM's departmental lineup is very impressive, and if it were possible to implement it from the ground up, competitors the likes of DEC would have a rough time.

This fact, in turn, brings us to the bad news. It is not possible to implement this scenario from the ground up. Most of the components of the new IBM architectural complex date from the early 1970s, when they were sidelined after Thomas J. Watson Jr. expressed his opinion that the 370 architecture would last until the 21st century. Fifteen years later, the sins of the fathers are being visited on IBM and on its MIS users.

More than a decade's worth of MVS, IMS, CICS and SNA communications software has been laid down. What was IBM thinking about when it deliberately promoted a whole departmental systems architecture during the 1980s that was disastrously incompatible with what is now being introduced? System/36s collapsed under the weight of Displaywrite, Disoss was temporarily fixed with software Band-Aids, and a mass of software had to be overlaid on a structure already burdened by its own weight.

It was not just a mistake. The whole process was too well planned for that. More likely, it was a misjudgment.

IBM management must have believed that its customers would toe the line and drag themselves through the largest architectural transition in the history of MIS. But when the degree of resistance to this migration became apparent, IBM resorted to marketing hype for the 9370 and the company's Systems Application Architecture. Just more banging the drum for departmental computing.

The irony of it all

There is a certain tragic irony to the situation. IBM is in the process of bringing in an architectural complex that is far superior to anything it has had before, but it cannot be optimized without massive migrations. The company dare not reveal to its customer base the full extent of the architecture because to do so would also be to reveal just how different it is from what IBM has been marketing for decades.

This leads to one other, final irony. IBM cannot bring in customers to show them its own departmental network to help sell them on the concept for the simple reason that IBM doesn't have a departmental network. It never installed System/36s en masse because its own internal VM network made them unnecessary, and that network ran and continues to run quite efficiently on host mainframes.

Don't take my word for it; ask IBM to tell you about how the company uses departmental systems in-house. Ask how many System/36s IBM uses for departmental systems applications and how many 9370s it plans to install for departmental computing.

The reality is that the IBM internal network and the architectural complex to which IBM is moving are fundamentally two-level, not three-level, in their original forms.

From IBM's point of view, the mid-range component, the 9370 and, indeed, the whole concept of departmental computing are for public consumption. ◆

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MARKET ANALYSIS

Up for grabs

Vendors vie for mid-range

BY STAN KOLODZIEJ

Departmental computing has been a wide open market for years, a potentially enormous and lucrative area resting strategically between the twin processing towers of mainframes and microcomputers. The stakes are high with departmental computing, and vendors are all too aware of the future marketing importance of capturing high, visible ground in this arena. They are also aware of the repercussions of failing to gain a foothold.

A hold on computing's middle tier can give a company control of the critical function of conducting data to and from micros and mainframes, a need that likely will continue well into corporate computing's future. This role of departmental data gatekeeper could have gone to IBM, but IBM failed to win a clear departmental decision years ago when its System/34, 36 and 38 and 4300 lines of mid-range systems bowed.

In light of IBM's continuing inability to dominate the departmental computing market, however, minicomputer vendors, personal computer software firms and communications companies are making headway. These other vendors are presenting their own departmental computing approaches and philosophies, ideas that are adapting to changes under way in personal computing and local-area networks.

For example, Digital Equipment Corp.'s All-In-1 departmental system began as a philosophy to deliver an umbrella of integrated hardware and horizontal software and has since undergone change.

"I think the whole emphasis now in departmental computing is on how well vendors can adapt to changing computing environments," says Dick Loveland, DEC's manager of system engineering for business and office information systems. "When you look back to 1982, the year we introduced the All-In-1 departmental system, the big aim was to provide a consistent processing shell or environment that could give users easier interfaces than existed at the time. On top of that, we built what we considered to be the primary office functions of electronic mail, word processing and access to corporate data."

Next, Loveland says, came the need for more vertical, department-specific applications. "Now we have to go ahead and accommodate Microsoft Corp. MS-DOS-based PCs and LANs. What we've seen in the '80s is the ability to provide cost-effective desktop solutions with terminals and PCs," he says.

"People are now demanding types of services that go beyond what they originally intended with a desktop device," Loveland says. "They want more sophisticated and integrated capabilities." Keeping up with the explosive growth of PC applications and communications will set departmental communications' course for the next few years, he claims.

But DEC is not alone in its emphasis on approaching departmental computing as a grid of communications from which horizontal and vertical software can be delivered. Minicomputer vendors such as Data General Corp., Hewlett-Packard Co., Unisys Corp., NCR Corp. and Honeywell Bull, Inc. all emphasize the minicomputer-cum-server as the centralized machine that delivers third-party packaged software to departmental users.

The many Unix-based departmental systems

Kolodziej is *Computerworld Focus*'s senior editor.

vendors currently in the market are no exception. Systems from Quadratron Systems, Inc., Uniplex Integration Systems, Inc., Altos Computer Systems and Computer Consoles, Inc. take advantage of the Unix operating system's multiuser capabilities to drive software applications from powerful minicomputers to departmental users.

"We deliver word processing, data bases, spreadsheets and electronic mail," explains David Leonsig, marketing manager at Uniplex. "These are the major business applications."

Centralized to the extreme

The extreme extension of centralized, departmental control can be seen in executive information systems, which aim to deliver very specific, vertical software to upper level management.

"We've found users are craving more specialized office software functions," says David Friend, president of Pilot Executive Software, an executive information system software vendor in Cambridge, Mass. "We're seeing more need for horizontal communications among our users, and we've felt a need to bring a lot of the Pilot software applications down into the middle-management level. We're a communications vehicle, and I think that's a perception that has changed recently with departmental systems. The emphasis is on communications now, not just software."

For Chris Stone, manager of office systems software at DG in Westboro, Mass., departmental computing has been a continual evolution toward the easier integration of separate software applications through advances in communications.

"Providing vertical applications is important, but communications is going to be the driving factor behind departmental computing," Stone asserts. "If your communications are good, the vehicle for enhancing software applications is there."

Stone's contention is that facile communications are essential for ushering in the future of departmental computing, which will emphasize nonprocedural data access and exchange and the distribution of relational data bases.

"You have to be able to get in and out of data bases quickly, through LANs, through wide-area networks and through other networks," Stone claims. "You have to be able to do that effortlessly and completely, and that will give you distributed data access and processing. That's true departmental computing, and that's way ahead of what separate LANs and smaller work group computing can now deliver."

Not enough oomph

Although departmental systems vendors may incorporate LANs into their product offerings, most, like DG's Stone, maintain that LANs simply cannot deliver the power and software needed to drive departmental systems.

"We know there are vendors trying to promote LANs as departmental systems, but having five people on a LAN is not going to give you distributed data processing," Stone says.

Others would temper that statement, however. Susanne Purnell, an analyst at Dataquest, Inc., a San Jose, Calif., research group, says she has seen good LAN market growth in departmental computing, specifically at the small work group level, the organizational building blocks that make up departments.

"I really think LANs are still for the smaller departmental player," Purnell says. "But perceptions are changing. Until recently, LANs were considered too slow, devoid of good work group software and too expensive to be taken seriously in departmental installations. That's turning around."

For at least one corporate user, departmental systems might be considered overkill — too expensive and offering more power than users need. "If I had to go through it again today, I would go with LANs instead," explains Ken Grissinger, assistant vice-president of operations at Beneficial Standard Life Insurance Co. in Los Angeles. Grissinger says his department has 55 users running departmental applications over a Unix-based departmental system from NBI, Inc. in Boulder, Colo.

Originally installed in mid-1986 to handle word processing and copy writing, NBI's system won Beneficial over because of its good interface to the organization's Compugraphic Corp. publishing system, an important requisite in the insurance business.

However, Grissinger contends that the departmental system, which runs over two NBI minicomputers and a file server, just has too much power for what his department needs.

First of all, the system is based on University of California at Berkeley Unix 4.2 instead of AT&T's Unix System V, which, Grissinger says, limits the amount of third-party software available to the department.

"Another problem is that we have never required the mainframe interface that NBI provides with the system. That would have given us more justification for the system's power. If I had my druthers, I would go with a [Banyan Systems, Inc.] Virtual Networking System network or something like it. I think LANs are flexible and powerful enough for departmental use now," Grissinger says.

User demand has prompted almost every departmental system vendor to enter into agreements with LAN vendors to integrate LANs into backbone departmental networks. And it is not just LANs that are being integrated; most popular PC software application packages are licensed by departmental vendors in an effort to stay ahead in the escalating game of providing one-stop departmental shopping.

As a result, some see departmental computing in danger of becoming an industry catchall, overburdened with too many services, a situation that may further blur the distinction between vendors' products.

"I think departmental computing, to some extent, has become a dumping ground for services without enough regard as to whom the vendors are servicing," says Wayne Sennett, vice-president and general manager at Cupertino, Calif.-based Motorola Computer Systems, Inc., a relative newcomer to departmental computing with its Linked Information Environment series of integrated departmental software offerings.

For Sennett, concentrating on servicing work groups entails processing differences that most departmental system vendors have not yet addressed.

"Departmental computing is today a broad brush stroke, an attempt to place all users on basically the same applications level," Sennett says. "Departmental computing brings in canned applications and tries to merge the user with the system, not the other way around."

Sennett claims that Motorola's research indicates that a majority of time is spent by work groups keying in one sort of data or another. Much of the remainder of the time is spent analyzing and reporting on the data.

"What users want are canned software tools, not canned word processors," Sennett says. "They want tools that are made so that work groups can design and handle many of their applications themselves, without bringing in programmers. It gives work groups the ability to become masters of their own fate.

"In a sense, the software has to be generic, because you don't really know in advance what the intended work groups are about," Sennett explains. "But you won't be able to deliver this software to the work group level unless you can create and distribute data bases across a variety of system platforms. With work group departmental computing, you have to capture data, work on the data within the work group and then share it with the rest of the corporation."

Sennett says that work group computing is accomplished by treating software with an open systems approach, similar to what has been occurring in the hardware microprocessor industry.

"Today, we talk a lot about open hardware and architecture in which we can get a processor board and plug it in, and things run and drivers are kind of generic and so on," Sennett explains. "You can't do that very well with integrated software packages, however."

IBM needs heavy hitting

As for IBM, the company has not been silent amid the activity. In response to mid-range market gains by DEC and other minicomputer vendors, IBM has recently wrapped its 370-based hardware into its 9370 departmental machines. Yet an apparent stall in 9370 sales and software development has again blunted IBM's departmental push, and now some are saying IBM will have to wait for its Systems Application Architecture to provide the firm with the heavy hitting it is looking for in the departmental market.

Despite these problems, IBM will continue to be important in departmental computing because of its several mainframe-based de facto software standards, most notably the VM operating system and the DB/2 relational data base system, which the company is pushing into the mid-range. Both products continue to gather huge third-party software support.

In the meantime, IBM has declared it will not abandon its beleaguered System/36 and 38 line of minicomputers and continues to announce enhancement products to emphasize that point.

Besides, IBM controls the surrounding micro and mainframe markets. And it is those same markets that are now changing the face of departmental computing. ✦

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CORPORATE SURVEY

Are the mini's days numbered?

Rise seen in LAN, file server use

BY MARTY GRUHN

Early returns from surveys of MIS executives and departmental managers indicate that the days of the minicomputer as the premier mid-range solution may be numbered. In the past year, local-area networks and network file servers have made dramatic gains, and future trends suggest that their hold on corporate America is likely to tighten. Because these systems represent an alternative way of supporting work group and departmental computing, they pose a significant threat to the niche mid-size minis now enjoy.

There is growing evidence that users are beginning to expand their options in supporting work group and departmental computing requirements. This finding is based on a survey conducted by The Sierra Group in Tempe, Ariz. The marketing research firm sent comprehensive surveys out between November 1987 and January 1988 and received responses from 870 companies in various vertical markets, such as finance/banking, insurance, manufacturing, medical and scientific/engineering.

The responses paint the profile of a marketplace in transition, one in which local-area networks and network file servers form the future. The study indicated that in organizations in which departmental minicomputers and LAN or file server technologies are already installed, companies plan to increase budgets to extend LAN and network file server environments.

Of the firms surveyed, 21.5% said they plan to increase spending for departmental minicomputers, compared with 44.5% and 43.2% that said they plan to increase budgets for LANs and network file servers, respectively.

This trend is further underscored when the number of units to be installed this year is compared with the existing installed base. Within the survey sample, 516 companies reported plans to install 836 departmental minicomputers (an average of 1.6 minicomputers per company, or a 16.3% growth).

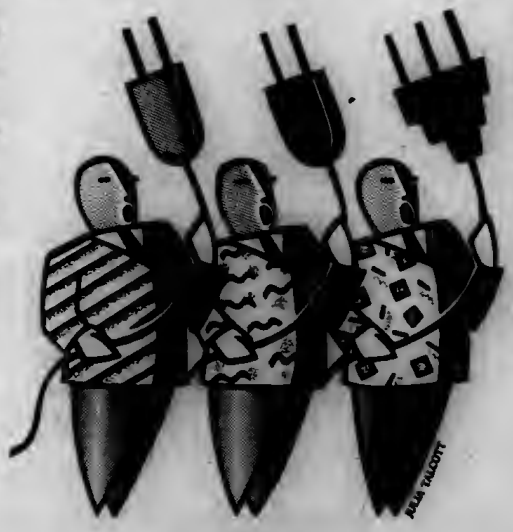
In contrast, 274 companies said they intend to install 617 LANs (an average of 2.25 networks, or a 65.9% unit growth), and 117 companies said they plan to install 335 network file servers (an average of 2.86 servers per company, or a 60.4% unit growth). Thus, while the number of departmental minicomputers installed by the end of this year will still be greater than the number of networks and file servers in use, the most dramatic growth will take place in networked support systems.

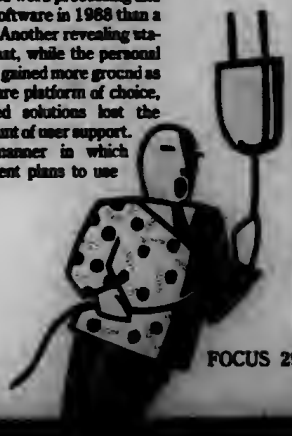
The survey also indicated that overall user satisfaction with departmental minicomputers declined between 1987 and 1988, while satisfaction with network file servers remained relatively stable. These dynamics combined to make user satisfaction with network servers higher than that of departmental minicomputers.

Although the satisfaction with the overall performance of LANs also declined between 1987 and 1988, it remained on par with the ratings of departmental minicomputers. Taken in the aggregate, it is clear that users perceived that early LAN/file server installations provide at least equal performance and, based on strong purchasing momentum, offer higher value for the dollar.

Compared with a 1987 Sierra Group survey, which had the same baseline questions, the number of users planning to purchase software is slightly lower this year, with the most notable decline in planned purchases for departmental minicomputers. Alternatively, software to be installed on LAN servers is higher in several areas for 1988. More managers reported plans to buy LAN-based word processing and imaging software in 1988 than a year ago. Another revealing statistic is that, while the personal computer gained more ground as *the* software platform of choice, LAN-based solutions lost the least amount of user support.

The manner in which management plans to use





Gruhn is a vice-president of The Sierra Group, a marketing research and consulting firm in Tempe, Ariz. She serves as manager of the company's industry services, end-user studies and strategic consulting group.

LANs also emphasizes departmental minicomputers' tenuous position as the preferred mid-range solution for the future.

Of those respondents with LANs installed, the vast majority said they will use their LANs to facilitate PC-to-PC communications, with the goal of PC-to-mainframe connectivity ranked as a distant second priority. Establishing PC-to-minicomputer links and using the mini as an intermediary between the PC and mainframe (PC-to-mini-to-mainframe links) ranked third and fourth, respectively.

The study also looked at the viability of using a departmental minicomputer as a network file server. A review of the technologies in use by the survey base indicated that, contrary to the marketing strategies of the major minicomputer suppliers, most users are installing PC technologies as network file servers.

PC-based servers prevail

The vast majority of those surveyed reported using Compaq Computer Corp.'s Intel Corp. 80386-based PC models, IBM's Personal System/2 Model 60 and 80 and a variety of IBM- and third-party-provided Personal Computer ATs as their network file servers of choice. Only in Digital Equipment Corp. accounts did minicomputers emerge as platforms for file servers. In IBM accounts, PC-based servers prevailed, with 71% of IBM users with LANs installed reporting the use of PC-based servers on their networks.

So what do these statistics mean and what future effect will they likely have on the minicomputer and LAN or file servers as complementary — but competing — departmental alternatives?

First and foremost, these findings illustrate that, despite the industry's rocky start, LANs and file server technologies are working well within many companies and, once through the shakedown period, are enjoying a solid and growing demand. The survey results also illustrate that the integration of PCs is, and will remain, the foremost agenda of departmental users this year, and technologies that support this requirement will be embraced.

As important, the strong demand for network and server solutions, in contrast to the lesser demand for minicomputers, also suggests that many of the promises vendors made to users in the past few years have yet to be realised.

Despite a flurry of announcements, strategic intents and promises, minicomputers are not yet perceived as being able to deliver the levels of cost-effective and painless PC integration that users seek. Networks and PC-based servers have come into that void. This trend is one that minicomputer suppliers can ignore only at their own risk.

There are other more subtle but equally enlightening implications of the study. As networks emerge as a prevalent technology to connect multivendor environments, the need for industry standards has now reached critical proportion. Industry suppliers must begin to deliver these solutions in 1988, rather than use the words "industry standards" as a marketing theme or a catchphrase to buy time for future development.

> **The fate of the departmental mini lies in the hands of suppliers whose charter is clear: Provide real PC integration or end users will do it themselves.**

It is also clear that manufacturers of larger systems will have to deliver more cost-effective departmental alternatives faster to stay ahead of the revolution in PC technologies. PCs are no longer merely single-user desktop systems but rather are becoming multiuser servers. The continued acceptance of PC-oriented solutions will have a ripple effect upward through organizations and will change how and when users utilize larger computing resources.

The number of 80386 PCs and high-end PS/2 models in use as file servers also suggests that subtle shifts are at work in the PC marketplace. These systems may have missed many desk tops, but they have found a logical niche as centralized support systems in PC-oriented networks. The implications for PC and third-party networking vendors are obvious, as is the specter of OS/2 as a significant network server operating system in the future.

In the final analysis, however, the most significant question remains. Do these trends spell the demise of departmental minicomputers or just a bump in the road to fully distributed computing? The pragmatic view is that these changes represent a significant shift in the potential scenarios for the future. What they will mean to last year's darling, the departmental minicomputer, remains to be seen.

The fate of the departmental mini lies in the hands of suppliers whose charter is clear: Provide real PC integration or end users will do it themselves.

Vendors that have based their 1988 strategies on the solid foundation of networking and can deliver tangible PC integration will find a receptive audience. On the other hand, minicomputer vendors that have not done their homework and continue to ignore the PC integration issue will find a limited set of opportunities this year. ◆

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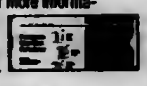

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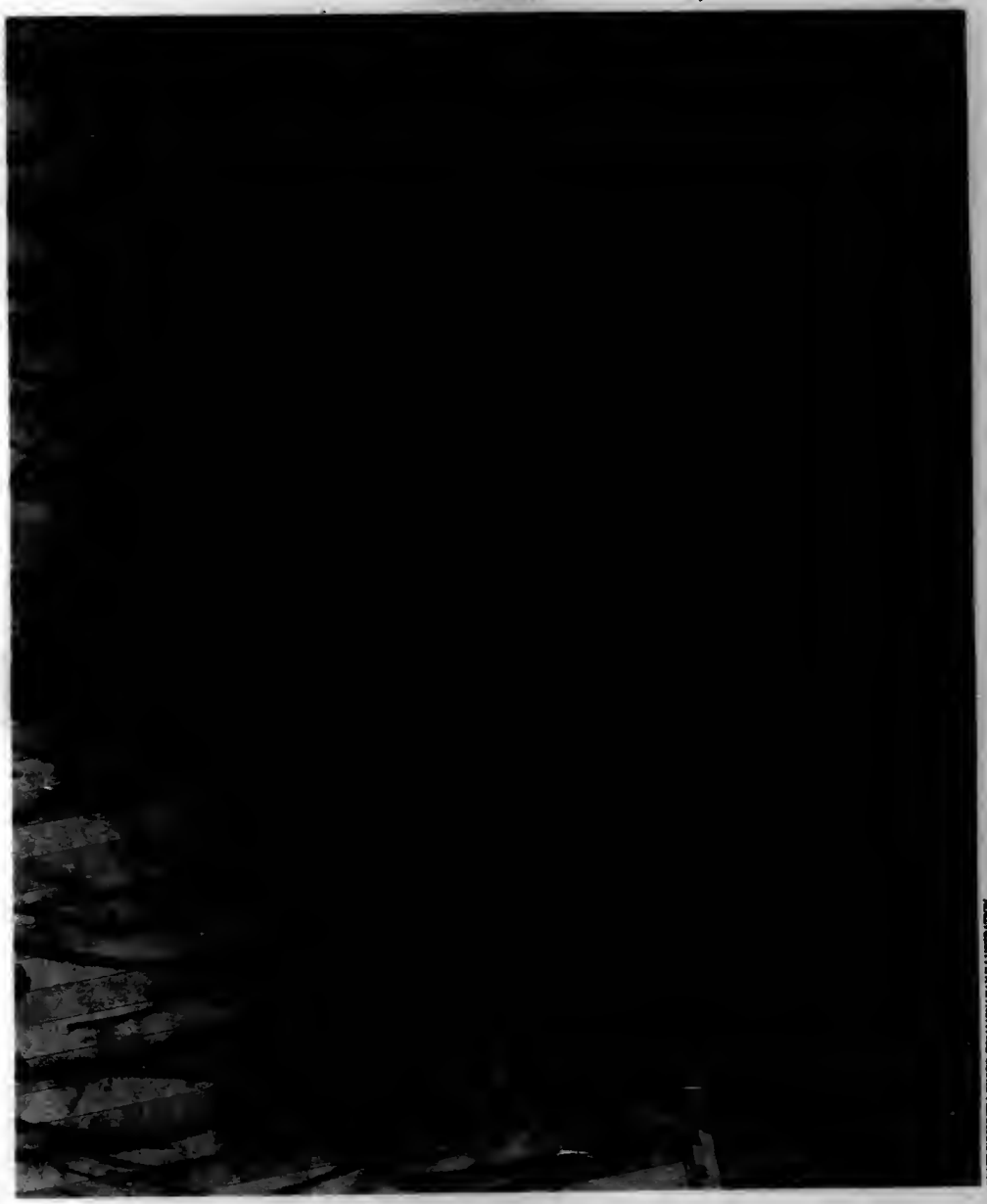

GEOFF O'CONNELL PHOTO; TOM MONAHAN ILLUSTRATION

To each according to his need

BY MICHAEL TUCKER
FEATURES EDITOR

Pity poor departmental computing.

It has been around ever since the invention of the minicomputer. But after all these years, you can still get yourself into a good knock-down-drag-out fist-fight trying to define the term.

Part of this confusion stems from the fact that companies have tailored the concept to their needs; in fact, the three organizations that *Computerworld Focus* spoke with have created departmental computing in their own image.

During its salad days, departmental computing and departmental computers were easy to explain. As far as MIS was concerned, departmental systems were minicomputers that were situated in small organizations and supported two to 20 terminals. Frequently, they were not connected to any other processor. Departmental computing was simply another way of saying word processing.

That all began to change in the 1970s. Minicomputers became so powerful that, increasingly, they challenged mainframes at some data processing tasks. Minis, or rather the people that managed them, became the first rivals to MIS officers for sole control of the computer power in major corporations.

In the 1980s, the situation shifted again. Microcomputers, particularly personal computers, emerged to challenge minis. Departmental systems went briefly into eclipse, only to reappear as part of a new philosophy of computing. Such systems were now proposed as the middle section of a three-tiered computing network, with PCs at the bottom doing personalized computing, corporate mainframes at the top managing company data resources and minis, or mini-like multiuser micros,

An analyst handicaps the top eight departmental frontrunners. Page 33.

Turn your desktop system into a multiterminal monster

WHILE MULTIUSER microcomputers or minis get star billing in departmental computing, there are other candidates for the role.

For instance, MIS professionals who must be their own systems integrators and who must deal with budget constraints may wish to consider the humble personal computer or IBM's Personal System/2 to do the job.

There are now a host of companies that provide the technology necessary to turn single-user systems into multiuser ones. For a small investment, you can turn a desktop system into a multiterminal monster. This alternative is particularly attractive given the new generation of 32-bit personal computers.

As an example, Star Gate Technologies, Inc., headquartered in Eastlake, Ohio, markets a number of cluster controllers for PCs and their kin. The recently introduced CC-9000 reportedly can give a PC based on the Intel Corp. 80386 processor 80 serial and 20 parallel ports. It can also function as the hub of a 10-port star configuration network.

For systems integrators working with the PS/2, meanwhile, St. Louis Park, Minn.-based Digiboard, Inc. offers the Digiboard Openender. A multichannel communications board, the product gives the PS/2 either four or eight asynchronous serial communications ports as well as an optional serial port. Up to four Openenders can be used at once for a total of 32 ports.

Even the vendors of this kind of technology will admit that turning PCs into multiuser systems is an unusual business. In a sense, it is the ultimate violation of a personal computer — depersonalising it.

But for MIS in an age of costly stock market crashes and reduced capital spending, the multiuser PC can be an effective way of getting departmental computing without the price of departmental computers. — MICHAEL TUCKER

acting as oracles in the center.

Today, even this classic, three-part definition has begun to fail. New functions, such as data network management, have been forced onto the departmental processor. Some observers are beginning to talk about departmental systems providing a fourth tier — connections to the world outside local networks.

Thus, as an industry and a technology, departmental computing may be undergoing a severe identity crisis.

A connectivity passion

Fortunately, a new consensus of what departmental computing is and does seems to be taking shape. In it, departmental computing is a combination of old and new functions. The new departmental computer may gracefully concede most office automation functions to PCs, but it claims connectivity as its own with a passion.

A certain number of the oldest departmental computing definitions are still current. Many MIS installations continue to use minis and multiuser microcomputers to provide the OA applications and small group processing for which minicomputers were first designed. In some ways, for this definition of departmental computing, minis seem almost immune to obsolescence; they continue to be used despite the fact that 32-bit personal computers now actively rival older minis for processing power.

Kenneth Bosomworth, president of market research firm International Resource Development, Inc. in New Canaan, Conn., explains the situation by noting that sheer processing power is not what is really wanted in departmental computing. "The principal focus [for such systems] has been word processing and data access," he notes. "You're not concerned with power here, not in the sense of number crunching, anyway. You're not computing numbers. Rather, these machines are information sifters."

Replacing mainframes?

Thus, even in this day of personal computers, you can still find a lot of dedicated minis providing communications, file server functions, electronic mail and even word processing for departmental organizations. When the management of local data is added to that mix, then we up the ante to the point at which departmental computing can truly augment mainframe processing — or, in some cases, even replace it.

One of the purest examples of that kind of departmental computing is at the Port of Seattle in Washington. Once a big iron shop supporting two Burroughs Corp. mainframes, the Port is now a strong minicomputer advocate.

The Port provides administration and services to the seaport and airport of Seattle as well as to scattered administrative installations around the city. In 1979, according to systems manager Tim Hutton, the Port decided to "try distributed processing, mostly to cut down on communications costs. We had mainframes communicating over telephone lines to our offices. That was expensive."

The Port bought three Wang Laboratories, Inc. Wang VS systems. One was placed at the main computing site, where it off-loaded work from the two mainframes, another went to the airport and still another was installed at the Port's waterfront facility on the docks. Rapidly, the Port grew to depend on the minis far more than on its mainframes — so much so that by 1988, it could dispense with one of its two mainframes and increase its population of Wang units to five.

As to the effectiveness of departmental computing in his organization, Hutton cites some interesting numbers. "In 1979, we had a staff of 55 people. Today, we have a staff of 56, an increase of only one in nine years. In '79, our budget was $2.1 million; today, it's $2.4 million, and that's mostly just increases in salary due to inflation. In '79, we supported 800 programs; today, 6,000. In '79, we had 125 users; now, we've got 660, and of that number, only 50 are not on the Wangs."

He says that the only applications remaining on the mainframe are those that simply aren't worth the effort to convert to minicomputers, such as listings of aging equipment. And even those will go in the next year or so when the last mainframe is booted out the door.

However, Hutton does feel that mainframes have a place in the world. "It just so happens," he says, "that we were in a position to do without them."

He also notes that departmental systems have their drawbacks. "It was a bit of a hassle coming up with a place to put them," he says. "Wang advertises the machines as being able to run in a normal air-conditioned and heated office, and that's

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true. But they are also noisy. Their disk drives put out a lot of sound. That can get on people's nerves. We ended up building small computer rooms for them. But of course, we then outgrew those rooms pretty quickly."

Other problems included backup and support. Seattle's airport, which has two Wangs and more than 130 workstations, is 30 miles away from the Port's main computing site. "When you've got that many people working on a system, you've got to have an on-site programmer/analyst — not to support the system but to support the people on it. Users are users, whether of PCs or mainframes or minis, and eventually, they're going to need help," he says. Port MIS staff members now take turns providing on-site support.

Backup has not been as easy. The Port employs two computer operators to drive from installation to installation to perform evening tape backups of data.

Ironically, the one thing that the departmental systems did not do was cut down the need for communications. But, Hutton says, that had more to do with the changing nature of communications than it did with the minis. Increasingly, data links are simply part of computing. "We've got 150 connections to the outside world," Hutton says. "They range from links to the steamship lines to connections with the U.S. customs office."

Few MIS officers would probably go so far with their departmental systems as has the Port of Seattle. For most DPers, the idea of departmental computers is that they assist, rather than challenge, centralized systems. Indeed, the most widely held theory of departmental computers is the famed three-tiered model of computing.

Three-tier classic

Grumman Data Systems in Bethpage, N.Y., provides a host of computing services to its parent, engineering firm Grumman Corp. Grumman Data's approach provides a classic example of the three-tiered model, most likely because the firm's assistant director of automated data processing, Jerry Michael, says he is a believer in this kind of computing setup. "When you have an efficient computer, like a mini, that lets you put applications and development close to the user, you can be very, very effective."

At the bottom tier, Grumman Data supports a host of desktop systems — both terminals and PCs. At the top level are a cluster of IBM mainframes. And in the middle are a selection of Hewlett-Packard Co. HP 3000s, Digital Equipment Corp. VAXs and Wang VS systems.

"In our definition," Michael explains, "a departmental system is any that handles data or applications that are unique to a single department, rather than a generic application useful to the whole corporation."

As an example, Michael points to a division of Grumman that "does nothing but keep track of government-furnished equipment, that is, material that is loaned to us by the federal government. That's pretty unique."

Departmental computers also keep track of the firm's hazardous waste, fixed assets and business-related traffic. Depending on the size and function of the department they serve, the departmental systems will support between six and 250 users.

However, Michael cautions that each tier provides a unique service. He argues that attempting to replace any one type of machine with another — say, to attempt to do all the mainframe tasks with a mini — is to risk becoming inefficient. "No one tier replaces another," he says. "Give the user a PC so he can keep track of his own data, give the department a mini so it can perform local processing, and then provide links to the corporate mainframe."

He has only one serious beef with the standard three-tier definition of computing. "There's really a fourth tier," he says. "And that's communications with the outside world."

It is at this fourth tier, and possibly beyond it, that departmental computing is experiencing its crisis. In an age when distributed processing is increasingly a computing given, connectivity of hardware and software is MIS's holy grail. And, increasingly, departmental-level systems are being called on to provide that connectivity — even in settings in which these systems have traditionally never been used before.

For example, departmental systems have traditionally not been used in situations in which different departments had to be tightly integrated into a single effort. The assumption has always been that departmental systems, despite their upward links to mainframes, are still somewhat separate from the organization; if they haven't exactly been islands of computing, then they at least have been peninsulas.

Yet, notes Michael Packer, a senior associate with consultancy The Mac Group, Inc. in Cambridge, Mass., "you can still have integrated computing and not have monolithic systems if you keep control of the standards for interfaces and data within your organization." The devices that MIS officers are using more and more to keep that control are departmental-style processors.

Baltimore-based Johns Hopkins Hospital is a case in point. The organization supports a vast network that Raymond Lenhard, the hospital's vice-president of information systems, describes as "a very heterogeneous set of hardware and operating systems. We've got IBM mainframes, some DEC PDPs, a few Sun Microsystems, Inc. workstations and on and on."

Within this network, departmental computing is done in the usual fashion. "If the central hospital is the utility," Lenhard says, "then the various departments link to the central system as users."

Rx: Data integrity

But, Lenhard explains, a hospital has some unique requirements for any system of departmental computing. It must maintain levels of connectivity and data integrity far in excess of anything demanded of other data networks.

Patient identification is a good example. In a hospital, keeping records and files current, even if they are located in multiple and dissimilar data bases, can be a matter of life or death. It is critical to know that patient John Doe in Room 16, who checked in for a tonsillectomy, is not the John Doe in Room 37 who requires a heart transplant.

To provide that kind of safety, Johns Hopkins maintains a cluster of several (the number is growing) Pyramid systems from Pyramid Technology Corp. in Mountain View, Calif. These machines effectively ride herd on the rest of the network. According to Lenhard, "Lots of standards setting, lots of data management, lots of data security and lots of glue that holds it all together — that's what we've got on the Pyramids."

Lenhard says the result is a bit chaotic, but it is chaos that works. "It's not a design I'd advocate that people build from scratch," he says. "But what we've done here is face up to existing architectures. We've spent a lot more time networking systems and applications than throwing them out."

For MIS officers facing similar tasks, Lenhard has a single piece of advice — keep it simple. But, he cautions, it is not always easy to recognize simplicity when you see it. "It may not seem very simple to network two dissimilar data bases rather than just have someone type in the same piece of data twice, but really, it is. With dual data entry, you double your chances of an error." And, in the hospital setting, errors can be more than just costly in dollar terms. Thus, Lenhard's cardinal rule is, "You want to eliminate data entry as much as possible."

Departmental systems are one of those technologies that has long been slotted for an early death.

Personal computers and PC LANs have cut deep into the mid-range's traditional markets, and many analysts have suggested that, eventually, those markets will go with desktop machines and networks entirely.

However, Johns Hopkins' Pyramids show that departmental systems may yet have a place as connectivity and communications machines that support the fourth tier.

If that is the case, then departmental systems and MIS officers could become very close. Where, traditionally, information systems professionals have viewed departmental computers as alternate centers of computing power to MIS and, therefore, as a threat, such systems could now become MIS officers' single most important tool to manage the complexities of widely distributed processing.

Perhaps, rather than creeping slowly to an ungraceful end, departmental systems will experience a golden age. ◆

Snow White & the seven dwarfs

WHAT ARE DEPARTMENTAL computers, who sells them, and who uses them?

Market analyst Shaku Atre, president of Atre International Consultants, Inc. in Rye, N.Y., recently completed a study in which she attempted to answer those questions and others.

As for the market itself, "a departmental computer installation is a division, an organization or a department of a larger organization that has annual revenues of $10 million to $3 billion," she notes.

Atre finds it a little more difficult to say exactly who sells these machines most successfully, but she can narrow it down to one major vendor and a number of aspirants. She says the market consists of eight major vendors — IBM, Digital Equipment Corp., Hewlett-Packard Co., Wang Laboratories, Inc., Data General Corp., Prime Computer, Inc., Unisys Corp. and Nixdorf Computer Corp. — plus, of course, many, many smaller players. She says she feels that the eight companies will dominate departmental systems, at least in the short run. "The game now," she notes, "is figuring out which of them is Snow White and which are the seven dwarfs."

To this end she cites some recently released U.S. Department of Commerce figures that suggest most buyers of mini and multiuser microcomputers are not first-time users. Instead, they are organizations that already own at least one departmental-type machine and are now purchasing another, usually from the same vendor with which they've dealt before. "Mini or departmental computer sales will grow only by about 5% during the next few years," Atre says. "Which means, I think, that DEC will outpace IBM in this area, because DEC already has the largest installed base of such machines."

Atre says that DEC will, therefore, be the Snow White of departmental systems but, possibly, only in the near term. She cautions that some of DEC's competitors are looking stronger. IBM's push into departmental systems, with machines like the 9370, is the most obvious threat, but, she adds, "HP shouldn't be forgotten, and Data General shouldn't be forgotten."

Beyond DEC and the seven dwarfs, Atre explains, are what could be the most important rivals of all — the makers of personal workstations. "Perhaps in 1991 to '92," she notes, "Sun Microsystems, Inc. and Apollo Computer, Inc. will do to DEC what DEC did to IBM." — MICHAEL TUCHEN

products

TECH TALK

Departmental computing: Chameleon of the industry

By Michael Tucker

What *is* departmental computing, anyway? Or, rather, why is it so hard to define?

Oh, these questions aren't to say that you can't get good, firm explanations of the term. It is just that for every six people you ask, you get six definitions. For some, it means minicomputers. For others, it is another way of saying gateway machines. For still others, it is an expensive marketing program for computer vendors that have exhausted the personal computer market but lack the resources to sell mainframes.

It shouldn't be this hard. After all, the idea of a mid-range system between PCs and mainframes is intuitively attractive. Moreover, there are well-developed models and theories of how departmental computing should be done — the famed three-tiered architecture of corporate computing is a classic example.

Yet, hard it remains. Could it be that departmental computing cannot be defined because it is simply too broad a concept to fit into one category?

> Everyone has a unique definition for departmental computing.

To help explain, take today, for example. In the past six hours I have met with three vendors. Each was introducing or discussing a radically different product. At first glance, it would be hard to say that they were anywhere near the same topic. Yet, I submit that each was selling into the departmental computing market.

9:30 a.m. — Ungermann-Bass, Inc. arrives to discuss Access/One, which the Santa Clara, Calif., company describes as "a standard platform for the delivery of network services to diverse network users." That means that if I am an MIS officer, and my company has a bunch of different networks and networking media and I'm slowly going insane trying to run multiple networks on multiple media in one company, Ungermann-Bass can help me.

The firm claims it can provide a system that fits into standard wiring closets and allows me to run multiple networks over standard twisted pair.

I may still have to handle protocol conversion and the like myself (although Ungermann-Bass hints that it will be looking at products to do that for me), but at least I don't have to worry about multiple media. I can keep a few rolls of common twisted-pair telephone-style wire in the basement and spool out a few yards when I want to add another PC, workstation or terminal to the network. I don't have to worry about expensive cabling. I may save millions of dollars in add-and-move charges — the expenses I normally incur in moving terminals or adding new ones.

A single Access/One system costs about $10,000.

Ungermann-Bass talks about Access/One as being the foundation for enterprisewide communications. That is to say the product is meant to provide a standard platform for communications throughout the corporation. This function would seem to be the complete antithesis of departmental computing in which, in theory, communications happens solely between coworkers with related functions or through a departmental system acting as a go-between.

Yet being an antithesis is a bit like being an imitation, the sincerest form of flattery. To become the total opposite of something means that one recognizes the power of the enemy. So isn't a drive toward enterprisewide communications a tacit admission that communications is, today, a departmental affair and that the most one can hope to do, at the moment, is to link the departmental local-area networks?

12:30 p.m. — I arrive at a nearby hotel. I am having lunch with representatives from San Jose, Calif.-based Chips and Technologies, Inc. They spend the greater part of an hour and a half explaining to me how their company, in association with Adaptech, Inc. in Milpitas, Calif., and Phoenix Technologies Ltd. in Scotts Valley, Calif., and the Santa Cruz Operation, Inc.

Continued on page 35

Tucker is *Computerworld Focus*'s features editor.

PRODUCT CLOSE-UP

Prime superminis bow

Prime Computer, Inc. in Natick, Mass., has unveiled two superminicomputers for departmental settings. The 4050 and the 4150 join the growing list of small, multiuser systems that are so powerful they challenge mainframes in some applications.

The 4150 is the larger system, supporting up to 254 terminals. It boasts performance of up to 4.1 million instructions per second (MIPS), up to 32M bytes of main memory and up to 3G bytes of on-line storage. The 4150's price tag begins at $191,600.

The smaller 4050 supports up to 128 users, and its starting price is $88,000.

Both systems are software compatible with Prime's other 50 series machines. The 4050 and 4150 are true departmental systems in that they are meant to operate outside of MIS's glass house and in the unforgiving modern office environment. The systems reportedly can withstand the wide swings of cold and heat that air-conditioning and wintertime heating cause, as well as the dust, clutter and random shocks that arise from day-to-day usage.

> Stratus assaults DEC, Tandem with entry-level OLTP offering. Page 36.

The machines are also said to be easy to operate by end users and non-MIS officers.

The systems use the firm's Primos information system. This combined software environment and data base is related to Pick Systems' Pick operating system, which is, in some ways, one of the premier operating systems for departmental offerings.

What may be most significant

Continued on page 35

BLUE BEAT

The slighted 38

Brian Jeffery

Dateline: Rochester, Minn. Here, in the supersecret heart of IBM's development laboratory, a team of top IBM engineers is putting the finishing touches on the long-awaited Silverlake machine, which is known as the Olympic within IBM.

Sources close to the company say that the unit is composed of two lines, a System/38 follow-on and a System/36 follow-on, with a total of nine models, six of which will be introduced in 1988.

Users who have seen the system say that it comes with a new suite of Systems Application Architecture applications, comparable with those of the 9370 VM, a new version of RPG that is a superset of RPG-II and RPG-III, a Rexx-based control language and that it was designed by Howard Hughes after he had received inspiration from Darth Vader, who had landed in a flying saucer after finding a cure for cancer at the top of the Great Pyramid of Cheops, where it had been hidden by the CIA, which didn't want him to cure Emilia Earhart from the effects of a foolproof diet plan left to her by aliens, who had visited the earth 10 billion years before and built the Great Wall of China.

Don't you just love those Silverlake rumors?

Now that we have Silverlake out of the way, let's look at something more serious — the System/38. It is based on the most advanced computer architecture ever developed by IBM or, for that matter, anyone else. It has an integrated relational data base management system

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Tech Talk

Continued from page 34

in Santa Cruz, Calif., have worked together to produce a Personal System/2 clone kit. If you want to build a working PS/2 compatible, they will sell you pretty much everything you need, except for the casing.

I ask: Won't IBM take a dim view of their actions? They respond by saying that, in their understanding, semiconductor vendors (like Chips and Technologies) will not be troubled by licensing problems. But systems vendors that use IBM's Micro Channel architecture (like Chips's customers) will probably have to obtain IBM's permission.

We debate whether IBM wants the PS/2 to be an open or closed system. For the sake of argument, I suggest Big Blue will keep the PS/2 all for itself. For the sake of their customers, the people from Chips and Technologies say IBM will not. We agree to disagree.

Interesting, but not a departmental computing visit, right? A PS/2 is a *personal* system by definition, right?

Well, yes and no. It is now generally believed that, eventually, "departmental" will mean networks of some kind. Minis and multiuser systems will still exist, but, increasingly, they'll be big compute servers within intelligent LANs. The future may well be best revealed in technologies like those being promoted by the Network Computing Forum, a research and development association of systems vendors, in which the departmental system is considered a departmentwide network acting as though it were a single multiuser system. Some of the forum's members, particularly Apollo and Sun, are already performing batch processing with networks of workstations.

And the PS/2 shows strong signs of going in that direction as well. I questioned Sikander Naqvi, the Chips and Technologies representative, on that issue. He noted that, to the contrary, the IBM PS/2s his company has seen do not seem to contain any secret IBM connectivity hardware. What the machines do sport is the Micro Channel bus, which, because of its increased speed, could allow the machines to support front-end communications coprocessors of vastly greater power than any personal computer has managed before.

With that communications power, it would be possible to do with personal computer LANs the kind of departmental computing that has so far been done only with multiuser systems.

So, is the Chips and Technologies' introduction a PC story or a departmental story? You tell me.

2:00 p.m. — Waltham, Mass.-based Binary Engineering Software's President, Kevin Shea, arrives in the office. Binary Engineering has a new software product, Tech Graph Pad. The offering is a PC program for engineers that attempts to do for them what, say, Lotus's 1-2-3 did for businesspeople. Just as 1-2-3 is an improved and computerised version of paper spreadsheets, so, too, is Tech Graph Pad a computerised version of an engineer's graph paper.

The product costs $275 and requires an IBM Personal Computer XT- or AT-class machine running Microsoft's MS-DOS 2.0 or higher.

I liked the product and said so, but wondered why Shea was talking to me. After all, I write for MIS officers, not engineers. "Yes," he says, "but who supplies the software to the engineers?"

MIS holds the purse strings

Shea's point is simple: In most large firms, MIS buys the PC software. MIS managers are becoming ever more responsible for the software in departments other than their own. As a result, Shea explains, the MIS officer has to act more and more like some kind of vertical market application manager. Today, the department MIS supplies may be accounting; tomorrow, engineering.

So, even Binary Engineering is a departmental story.

I wonder. Could it be that departmental computing is hard to define because it is so immense? Could the departmental computing tale be similar to that of the story about the blind men who set out to define an elephant? Each of them reached out and touched a different part of the beast and found they each had a radically different idea of "elephantness," even though each had met the same creature.

Prime

Continued from page 34

about the Prime machines is their sheer power. When supporting 254 terminals, the 4150 boosts a user population that exceeds that of many mainframes.

As such, the question is whether the 4050 and 4150 can really be classified as departmental in nature or, rather, low-level, low-maintenance corporate DP devices.

Thus, the 4050 and 4150 join the ranks of machines that could almost completely remove end users from MIS's list of concerns. Whether that would be a blessing or a curse would depend on whether it meant MIS would be needed more, as central managers of distributed computing operations, or less, if end users discover little need for centralized systems. — MICHAEL TUCKER

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Reputation

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Stratus guns for DEC, Tandem

Stratus Computer, Inc. launched the New Year's first salvo in the fault-tolerant online transaction processing (OLTP) turf war, taking aim at Digital Equipment Corp. and Tandem Computers, Inc. with an entry-level computer priced at $79,000.

In Stratus' XA2000 line of continuous processing systems, the Model 50 boasts a price/performance ratio of $8,000 per ET-1 transaction/sec. and reportedly delivers performance as high 10 ET-1 transaction/sec.

"We expect this to be a volume product," said William E. Foster, president and chief executive officer of the Marlboro, Mass.-based company.

Foster, who denied seeing sales cycles stretch out, says Stratus is investing heavily in a strategy to sell to new domestic markets, such as retail, travel, government and telecommunications.

Stratus also has two key OEM relationships, with IBM and Olivetti Corp., which account for 30% of its annual revenue. "Our objective is to make IBM and Olivetti as successful as they can be," Foster said about the added significance of the entry-level announcement.

At the January product debut, Stratus also introduced communications hardware and software for the XA2000 family that paves the way for integration into a heterogeneous computing environment.

The products include an intelligent I/O subsystem that accommodates more interfaces and runs on its own dedicated processor; a universal communications adapter for specialised or proprietary communications protocols; an Ethernet communications adapter compliant with the IEEE 802.3 standard interface that comes with an optional Transmission Control Protocol/Internet Protocol (TCP/IP) interface; a low-end and a high-end disk subsystem ranging in capacity from 152M bytes to 781M bytes; and a ¼-in. cartridge tape subsystem, the Model T301.

The company also upgraded the operating system for the XA2000 line, VOS, to Version 8.0 to accommodate the I/O subsystem.

An entry-level configuration for the Model 50 includes duplexed processor boards with four duplexed CPUs per board, 8M bytes of duplexed memory and a 152M-byte duplexed disk drive. Software is composed of VOS, a transaction processing facility and a forms management system.

The Model 50 comes with a 34-in. cabinet and costs $79,000.

A Model 50-T comes with a 54-in. cabinet that allows for upgrading to the Model 70. It sells for $84,000.

Next in line

The Model 70, also part of Stratus's entry-level attack, boasts price/performance characteristics similar to those of the Model 50. However, the unit is capable of up to 12 ET-1 transaction/sec., according to the vendor. The Model 70 is priced at $110,000.

All three models begin shipping in the second quarter.

The Ethernet communications adapter and the user-programmable communications adapter cost $4,000 and $2,500, respectively. The TCP/IP software is priced from $3,000 on the Models 50 and 70 to $6,200 on existing Models 150 and 160. Shipments also begin in the second quarter.

Both the intelligent I/O subsystem and the D117-based disk subsystem are priced at $13,000 for 152M bytes, $17,500 for 320M bytes and $28,000 for 781M bytes. Shipments reportedly will take place in the first six months of this year.

The ¼-in. cartridge tape subsystem costs $5,000.

In addition, Stratus has reduced the price of its existing 448M-byte disk drive to $22,000. — HELEN PIKE

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The Insider

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when the time comes for a hardware upgrade, a Mac may displace a PC.

There are many good reasons to go with a Macintosh solution at the desk — ease of training being a major one.

Making allies

Apple has a good opportunity to strike up strategic relationships with a number of systems vendors.

DEC was an obvious candidate, but others are enticing as well. Those vendors that either begrudged the entire PC movement and accommodated the machines only in deference to the clamor of their customers or that just happened to be late with a PC solution may be able to create a potent departmental solution by featuring Macintoshes as front ends.

Those seeking an alternative to OS/2 now have it.

Millikin is vice-president and senior analyst with Patricia Seybold's Office Computing Group in Boston.

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Blue Beat

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more powerful and functional than any of the SQL systems, it employs 48-bit addressing (23 bit is standard for the IBM 370, 31 bit with MVS/XA), single-level storage, a language interface more sophisticated than even fourth-generation languages, the highest level of customer satisfaction of any IBM system and programmer productivity that averages seven to eight times higher than that of an equivalent 370 system. If IBM were about to introduce the 38, it would be the hottest story ever in the computer industry.

The surprising characteristics of the System/38 come from its origins. In the early 1970s, IBM worked on a project named Future Systems, whose goal was to develop a radical mainframe architecture to follow the 370. The development team was one of the most talented ever assembled, and the results of the group's research, seen in muted form in the System/38, are extremely impressive.

Yet it was left to IBM's General Systems Division to use the architecture, and the division was obliged by its charter to implement the architecture as, of all things, a small business system. This implementation is somewhat miscast in that the System/38 architecture is expandable far beyond the limits of the 370. IBM's own engineers say they believe that the 38 could be made to support 64-bit and even 96-bit addressing relatively easily.

The 38's history has been one of survival against odds. In 1974, then-Chairman Frank Cary canceled the Future Systems project, allegedly because of hardware problems but, in reality, because of opposition from the company's 370 lobby, which pointed out (rightly) that to introduce such a system would raise hell with the IBM customer base. After getting end users to convert to the 360, IBM wasn't about to try the same thing again. The 370 would stay, as far as anyone could tell, forever.

Then, in 1983, the System/38 was almost terminated in the same way as the 8100 series and for the same reasons: so as not to detract from the IBM commitment to the upcoming 9370. The 38 survived because a handful of IBMers and customers fought for it.

The 38 has proved particularly popular with low-end 370 users faced with a VSE-to-MVS conversion. In practice, even the most elementary calculations show that the additional performance requirements can be met more cost-effectively with a 38 than with an MVS conversion. The difference in System/38 overhead and in programming costs is that great.

European defense

Yet the System/38 has proved almost invisible to the MIS community in the U.S. In Europe, the contrast is striking. The issue of 370 vs. System/38 is widely debated in the press, there are numerous consulting firms to assist end users in handling migrations to a System/38, and no IBM seminar would be complete without a discussion of the System/38. IBM, while not liking the whole thing very much, has nevertheless gone along with what is a powerful and well-organized lobby.

In the U.S., the problem appears to be one of ignorance and prejudice. Most of the MIS community has not been exposed to the System/38. Ditto for IBM personnel: IBM management is staffed by veterans who won their spurs selling 360s and 370s, IBM marketing representatives are often poorly informed about the line and most MIS consultants apparently share IBM's prejudices.

Because of these factors, we may well be missing the real significance of Silverlake. IBM itself has said that the Silverlake line will eventually reach the $2 million range in 1991. That situation would put Silverlake well up into the 3090's price bracket. And having put Silverlake at that level, IBM would have to offer some kind of upward migration into the large mainframe area, which, in turn, would mean that Silverlake applications running something akin to a System/38 Control Program Facility would have to be supported on large mainframes.

And, IBM tells us, it is large mainframes that in the 1990s will have single-level storage, powerful relational data bases, advanced languages and a 47-bit operating system named "Planet." For the 370 architecture, then, you'd have to add one bit, the same way in which MVS/XA is equivalent to 32-bit. And that means Planet would really be 48-bit.

Hey, wait a minute!

Jeffery is managing director of the International Technology Group, a management consulting and market research firm in Los Altos, Calif.

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Add-in board rolled out

Computone tool boosts PS/2 multiuser platform

Computone Systems, Inc. has introduced Intelliport PS8, an intelligent eight-port multiuser board designed for IBM's Micro Channel bus architecture, which is used in IBM's Personal System/2 Model 50, 60 and 80 microcomputers.

The Atlanta-based company said that Intelliport supports up to 32 users or devices on the IBM PS/2 machines and will maximize multiuser use under Unix, Microsoft Corp.'s Xenix and other operating systems that run on the PS/2 systems.

Intelligent add-in boards, such as Intelliport PS8, will convert the PS/2 line into a fast multiuser platform, a setup for which there is already a strong market demand, according to Terrell Redd, Computone's vice-president of sales and marketing. "Much of the demand for intelligent boards is created by the confusion arising from compatibility problems in the [Intel Corp.] 80386 processor-based microcomputer market," Redd said.

"The standard IBM Personal Computer AT bus of the [Intel] 80286 processor market is history. The 80386 micro manufacturers are creating some compatibility problems with cache memory and other technology inside the 386 platform. I believe 386 AT bus standards will emerge, but today, the IBM PS/2 Micro Channel bus platform looks pretty strong," he added.

Redd said that the Intelliport PS8 board is powered by a 10-MHz Intel 80186 processor, which also off-loads most of the I/O processing from the host.

The board's features include Intelliview, enabling multiple sessions on each terminal; Intelliprint, enabling independent use of printers attached to terminals; and Intellikey, allowing up to 16 user-defined function keys.

Intelliport PS8 has a suggested retail price of $1,295 and is available now. — STAN KOLODZIEJ

Circle Reader Service Number 196

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Whenever two or more people get together to examine computer data/graphics, a real-time, large screen projection system is an invaluable tool.

Electrohome pioneered the concept of computer projection and, today, offers the most complete line of advanced systems. In the forefront are the new ECP® GRAPHICS single lens and ECP 3000 three lens systems. Both feature an advanced microprocessor that simplifies operation, and widens the capabilities gap between Electrohome and other projection systems.

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The ECP Graphics

This new single lens system can project images generated by high resolution (1024 × 1280 pixels, non-interlaced) CAD/CAM terminals, as well as video. Because it automatically locks on scan rates from 15-80 KHz, it's perfect for use with VCRs, PCs, terminals or high res CAD/CAM work stations. The ECP GRAPHICS is extremely portable and has VARI-FOCUS for screens 5' to 14' diagonal (front, rear or curved).

The ECP 3000

This new 3-lens system offers a bright, crisp image for screen sizes from 5' to 25' diagonal (front, rear or curved) and VARI-SCAN from 15-50 KHz. Like the ECP GRAPHICS this unit has a multi-function infrared remote control that includes digital convergence and all projector functions.

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Circle Reader Service Number 18

CALENDAR

March 13-19

1988 International Development Center Conference. Orlando, Fla., March 13-16 — Contact: Development Center Institute, P.O. Box 44087, Indianapolis, Ind. 46244.

14th Annual Computer Fair. Seattle, March 16-17 — Contact: Thomas Bennett, University of Washington Academic Computing Services, 3737 Brooklyn Ave. N.E., Seattle, Wash. 98105.

March 20-26

NCGA '88 Ninth Annual Conference and Exposition. Anaheim, Calif., March 20-24 — Contact: National Computer Graphics Association, Suite 200, 2722 Merrilee Drive, Fairfax, Va. 22031.

March 27-April 2

Thirteenth Annual SAS Users Group International (SUGI). Orlando, Fla., March 27-30 — Contact: Sally Roberson, SUGI 13 Registration, SAS Institute, Inc., P.O. Box 8000, SAS Circle, Cary, N.C. 27512.

World Congress on Computing. Chicago, March 28-31 — Contact: Cheryl Delgreco, The Interface Group, 300 First Ave., Needham, Mass. 02194.

The 16th Annual Interface '88 Conference and Exposition. Chicago, March 28-31 — Contact: Cheryl Delgreco, The Interface Group, 300 First Ave., Needham, Mass. 02194.

PRODUCT CHECKLIST

Yet another group of small business or departmental multiuser computers has come to market. These are the **Astra 400** and **Astra XL** machines from **NEC Information Systems**, a wholly owned subsidiary of the Japanese electronics giant NEC Corp.

The Astra 400 group is based on the NEC proprietary ITOS operating system. The group consists of the Astra 430, 450 and 470. Depending on the configuration, they will support up to 64 users and cost $13,945, $17,550 and $24,525, respectively.

According to the vendor, the Astra XLs are similar to the 400s, except that they are based on University of California at Berkeley Unix 4.2 rather than than on NEC's ITOS. Prices for XL machines range from $8,500 to $22,000.

NEC Information Systems, 1414 Massachusetts Ave., Boxboro, Mass. 01719.

Circle Reader Service Number 197

Jazz is back as **Modern Jazz**. Whether this revised **Lotus Development Corp.** integrated software will provide music to the ears of Macintosh users remains to be heard, however. Modern Jazz combines a worksheet, graphics, data base, forms, word processing and communications in a single package.

It runs on the Apple Computer, Inc. Macintosh Plus, Macintosh SE and Macintosh II machines as long as they support either two 800K-byte disk drives or one 800K-byte drive and one hard disk. Modern Jazz is priced at $395. Jazz 1.0 and Jazz 1A owners can upgrade to the product for $95.

Lotus, 55 Cambridge Pkwy., Cambridge, Mass. 02142.

Circle Reader Service Number 198

Data General Corp. has gotten into the personal computer-based desktop publishing business with a little help from its friends at Xerox Corp. DG has introduced the **CEO Desktop Composer**, a version of Xerox's Ventura Publisher 1.1. The product will allow desktop publishers working on Microsoft Corp. MS-DOS machines to link up with DG's departmental systems running DG's Comprehensive Electronic Office (CEO) office automation and networking software.

Thus, a CEO Desktop Composer user could extract corporate data from a departmental system and insert it directly into a document, the vendor said.

CEO Desktop Composer comes in several sizes and packages. The MS-DOS version costs $6,460. Prices for the CEO package range from $5,360 for the entry-level version running on the DG Eclipse MV/1400 to $50,015 for larger systems.

Data General, 4400 Computer Drive, Westboro, Mass. 01580.

Circle Reader Service Number 199

Wang Laboratories, Inc. has introduced a gateway between its office automation package, Wang Office, and Digital Equipment Corp.'s OA package, All-In-1. The gateway, known as Interoffice, was developed for Wang by The Boston Software Works, Inc. in Boston and promises to greatly increase connectivity in shops that combine or wish to combine Wang and DEC equipment.

Among other things, Interoffice allows the transparent exchange of electronic mail and documents between the two OA packages. In addition, Wang can provide similar transparent access to IBM's Professional Office System via Wang Profs, a gateway that Wang displayed at Telecom '87 last October.

Prices for Interoffice depend on the size of the processors involved. They range from $2,400 for smaller Wang VS machines to $9,500 for larger systems.

Wang, One Industrial Way, Lowell, Mass. 01851.

Circle Reader Service Number 101

A software development tool for creating cooperative processing applications has been unveiled by **Hewlett-Packard Co.**

The **HP Cooperative Services** development tool enables personal computers and HP 3000 business computers to process information jointly across a network.

According to the vendor, cooperative processing allows software developers to use the power of PCs in data processing applications. DP applications can take advantage of such PC features as Microsoft Corp.'s Microsoft Windows user interface and HP's Newwave applications environment.

The HP Cooperative Services development tool is priced from $2,700 to $8,700.

Hewlett-Packard, 3000 Hanover St., Palo Alto, Calif. 94304.

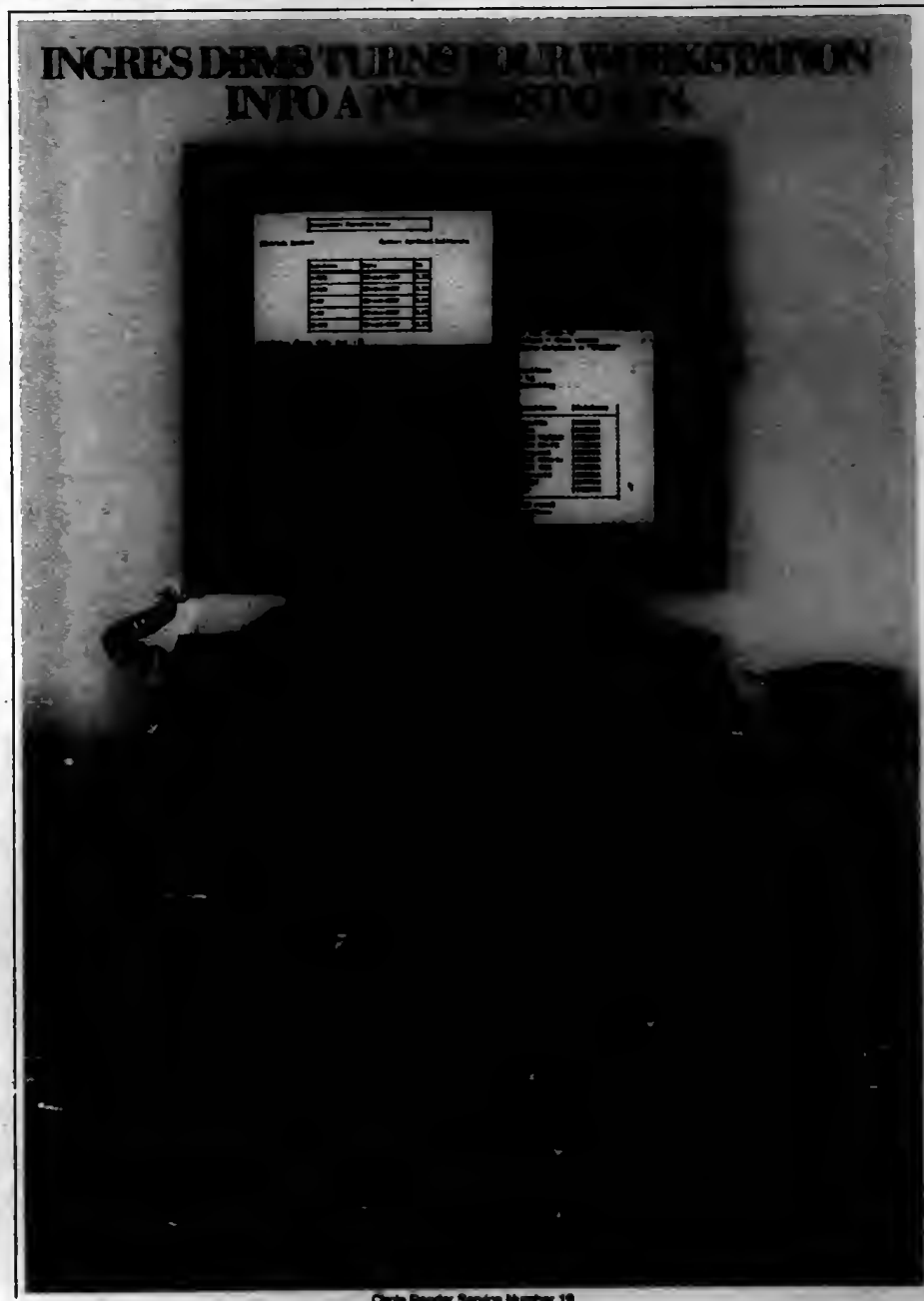
Circle Reader Service Number 102

Oracle Corp. is back in the news. The relational data base management system vendor has announced **Oracle for 1-2-3**, an add-in product for the Lotus Development Corp. spreadsheet. The product allows personal computer users to access data in the Oracle data base via the 1-2-3 spreadsheet. In effect, the spreadsheet becomes a user-friendly interface and query device for the data bases.

Oracle for 1-2-3 costs $199.

Oracle, 20 Davis Drive, Belmont, Calif. 94002.

Circle Reader Service Number 103

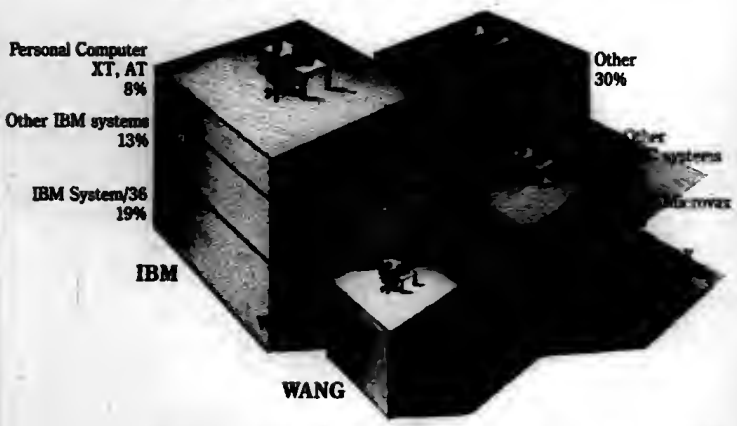


Circle Reader Service Number 19

log off

Departmental lion's share

In information centers, IBM holds the lead in installed departmental systems



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GRAPHIC BY BRUCE SANDERS

OF INTEREST

"Most of the components of the new IBM architectural complex date from the early 1970s, and they were sidelined after Thomas J. Watson Jr. expressed his opinion that the 370 architecture would last until the 21st century. Fifteen years later, the sins of the fathers are being visited on IBM and on its MIS users."

BRIAN JEFFERY
INTERNATIONAL TECHNOLOGY GROUP

See story page 23.

next issue

Data security is increasingly in the news — and for good reason. Spy sagas, expensive data losses and natural disasters are the bane of top management and can leave MIS shouldering the blame for insufficient prevention. April's *Computerworld Focus* will help show you ways to safeguard your systems. Learn how performance monitors and uninterruptible power supplies can maximize uptime and how hot and cold sites can come to the rescue if the worst happens. Security-minded MIS can also discover how to protect the growing ranks of personal computer networks.

Our Special Section salutes survivors. In it, we'll spotlight some infamous computer disasters and the tough lessons they taught. Check out April's *Focus* so you don't get caught playing the fool.

Apples shine as front ends

Michael D. Millikin

A growing synergy between DEC and Apple recently evolved into a formal joint development agreement between the two companies. This pact, coupled with DEC's latest refinement of its desktop strategy, opens up a new possibility for departmental computing: Apple Macintoshes used as the front end on a distributed departmentwide or enterprisewide network.

"Aaagh!" MIS and DP managers may choke. "Macintoshes?"

You bet. The squat little box that inspired some of the best and the worst advertising in the industry has grown up considerably and is easily the peer of personal computers when it comes to applications capability and connectivity. What has been missing for the Mac has been integration into network services and transparent access to either host-based or distributed applications.

DEC is supplying some of that network integration with its Network Application Support (NAS) program. In short, Digital has opened up its customers' choice of desktop devices. A DEC account can go with DEC's VMS or Ultrix, Microsoft Corp.'s MS-DOS, IBM's OS/2 or now the Mac operating system as the desktop environment. DEC still expects to sell its terminal-based strategies into many accounts. But both firms say they expect that the Macintosh increasingly will become a popular choice for DEC customers.

DEC says it plans to push out code onto the various desktop platforms for more distributed access to the network. For example, some or all of future DEC All-In-1 versions will be resident on the Macintosh.

Under NAS, the Mac will have access to the full suite of distributed network services announced as part of the growth of Decnet Phase V. It will also have access to the underpinnings for distributed network applications — the Remote Procedure Call, which is part of Decnet System Services.

But DEC's is by no means the definitive solution. Apple's Unix variant, A/UX, will provide access to both Macintosh productivity applications as well as to an industry-standard environment. With A/UX, Apple will have a workstation engine as functional, in many ways, as OS/2.

The battle for the future is OS/2 vs. the Mac operating system. There's not much Apple can do about the installed base of however many millions of MS-DOS and IBM PC-DOS machines that exist. From 1984 to 1987, Apple managed to sell one million Macintoshes. In contrast, last year IBM sold one million Personal System/2s from April to November.

OS/2 will exploit a hefty number of those machines (based on Intel's 80286 chip and higher), precluding a swap, en masse, for a different workstation platform. However, by cooperating with the MS- and PC-DOS and OS/2 environments and by offering its own comparable functionality, Apple should be able to win a lot of new seats. Then

Continued on page 36

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